THE RELATIONSHIP BETWEEN BODY MASS INDEX AND BLOOD PRESSURE IN ADOLESCENT SCHOOL CHILDREN

Dissertation Submitted for

MD Degree (Branch VII) PEDIATRICS

April 2011

The Tamilnadu Dr.M.G.R. Medical University

Chennai – 600 032.

MADURAI MEDICAL COLLEGE, MADURAI.

CERTIFICATE

This is to certify that this dissertation titled "**THE RELATIONSHIP BETWEEN BODY MASS INDEX AND BLOOD PRESSURE IN ADOLESCENT SCHOOL CHILDREN"** submitted by **DR.M.KUMAR** to the faculty of Pediatrics, The Tamilnadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of the requirement for the award of MD Degree Branch VII Pediatrics, is a bonafide research work carried out by him under our direct supervision and guidance.

DR.S.SAMBATH, M.D., DCH.,
PROFESSOR,
DEPARTMENT OF PEDIATRICS
MADURAI MEDICAL COLLEGE,
MADURAI.

DR.G.MATHEVAN, M.D., DCH.,
PROFESSOR AND HEAD,
DEPARTMENT OF PEDIATRICS
MADURAI MEDICAL COLLEGE,
MADURAI.

ACKNOWLEDGEMENT

My sincere thanks to ***Dr.Edwin Joe M.D., (F.M.),*** Dean, Madurai Medical College, and ***Dr.S.M.Sivakumar M.S.,*** Medical Superintendent, Government Rajaji Hospital Madurai for allowing me to conduct this study.

It has been inestimable pleasure and privilege to me to express my heartfelt gratitude, admiration and sincere thanks to ***Prof.Dr.G.Mathevan MD., DCH.,*** Professor and Head of Department, Institute of Child Health and Research Centre, Madurai, ***Prof.Dr.S.Rajesekaran, MD., DCH.,*** Former Professor and Head of the Department and ***Prof.Dr.S.Sambath MD., DCH.,*** Professor of Pediatrics.

I am greatful to ***Prof.Dr.S.Balasankar MD., DCH.,*** and ***Dr.J.Balasubramanian MD., DCH.,*** and ***Dr.S.Shanmugasundaram MD., DCH.,*** Assistant Professors of Peadiatrics Madurai Medical College, for their able assistance and guidance.

My sincere thanks to the ethical committee for granting the permission to conduct the study.

My thanks to District Educational Officer of matriculation schools and Higher Secondary Schools, Madurai for granting permission to conduct the study is the schools.

I take this opportunity to express my deep sense of gratitude to the ***Principal of Kendra Vidhyala School, Narimedu, Headmasters of Balamandhiram Higher Secondary School, Narayanapuram and Kallar Higher Secondary School, Vikkiramangalam, Madurai*** for their help in conducting this study.

My sincere thanks to ***children and their parents*** without whom my study would not have been possible.

I extend my whole hearted thanks to ***Media Nett,*** K.K.Nagar for their presentation of Dissertation work.

Finally I thank my Wife and Daughter and all my colleagues for the support they extended over these years.

CONTENTS

INTRODUCTION

Adolescents form prospective human resource for the society. Besides physical growth and development, significant physiological changes also take place during adolescent period, both among boys and girls. The period of transition from childhood to adulthood is hazardous for adolescent health, because they often develop behavioural problems and improper life style changes in absence of proper guidance and counselling, which has its reflection in the form of various diseases in adult life. One such disorder is essential hypertension, in which the risk factors for development have its initiation during childhood and adolescence. Investigations of the correlates of blood pressure in children and adolescents carried out in developed countries suggest that blood pressure level in children and adolescents are associated with various personal, social and environmental factors such as gender, race, weight, height and social class[1].

The relationship between body mass and blood pressure has been established more than 70 years ago[2]. Both cross sectional and longitudinal studies[3,4] in western populations have consistently identified an association between overweight and hypertension.

Several clinical trials have also shown an effect of weight reduction in lowering blood pressure[5,6]. Body weight adjusted for height is often used as an alternative to the measurement of adipose tissue mass in the evaluation of individuals or population for obesity[7]. One such measure in widespread use is Quetelet's index, which is body weight (in kg) divided by height (in m^2)[7]. Better known as Body Mass Index (BMI), this measure is promulgated by the World Health Organization (WHO) as the most useful epidemiological measure of obesity.

Body mass index (BMI) is positively and independently associated with morbidity and mortality from hypertension, cardiovascular disease, type II diabetes mellitus and other chronic diseases[8]. In Caucasian populations, a strong association has been depicted between BMI and mortality[9]. A similar association has also been demonstrated among Asian population[10].

The relationship between BMI and BP has long been the subject of epidemiological research[11]. Some studies have documented a consistent, but modest association between BMI and BP, whereas others suggested a BMI threshold at which level the relationship with BP begins[12].

The present study was undertaken to find out the relationship between BMI and blood pressure in three different groups of adolescent school children population says, urban, semiurban and rural areas in and around Madurai.

REVIEW OF LITERATURE

Obesity has become an increasingly important medical problem in children and adolescents. Many of the outcomes associated with obesity that were previously thought of as disease of adults are now affecting children and adolescents as well[13].

There is evidence that childhood obesity is likely to persist into adult life and there is increased likelihood of morbidity and mortality in all age groups. Obesity is associated with elevated blood pressure both in children and adults. High blood pressure in childhood is considered to be predictive of sustained hypertension in young adulthood[14].

Childhood obesity is usually defined according to age and sex specific BMI cut off points[15].

The BMI provides an index of weight relative to height and is generally considered with some limitations, to be a valid index of adiposity[16]. BMI in childhood changes substantially with age, as does blood pressure[17]. At birth the mean BMI may be as low as 13kg/m^2, increases to 17kg/m^2 at 1 year of age, decreases to 15.5kg/m^2 at age 6years and then increases to 21kg/m^2 at age 20 years.

Body weight is reasonably correlated with body fat, but is also highly correlated with height. Therefore, weight adjusted for height squared, Body mass index is a useful index to assess overweight and is a fairly reliable surrogate of adiposity. It is calculated easily from weight and height and is correlates with other measures of body fatness in children and adolescents[17].

BODY MASS INDEX : (BMI)

The Body Mass Index (BMI) is widely accepted as providing a convenient measure of a persons's fatness or thinness. It gives an index that is broadly independent of age, weight, height and so on and equally applicable to both sexes. It is the preferred method of expressing body fat percentile from clinical measurements. In the past, various other indices were tried but no one was found absolutely correct. Weight percentile is a useless term for any but a child of average height for age because this term does not take into consideration the height of the child, which modifies the appropriateness of the weight. The height-for-weight method is an improvement but does not differentiate between increased muscle compared with increased adipose tissue.

BMI or Quetelet's index is calculated by using the formula

$$\frac{\text{Body weight (Kg)}}{\text{Height } (m^2)}$$

BMI also correlates with other measures of body fatness in children and adolescents. BMI also correlates with markers of secondary complications of obesity, including current blood pressures, blood lipids and with long term mobidity and mortality.

There are other criticisms of the method relating to its ability to reflect body fat consistently between ethnic groups and states of nutrition. The BMI has good specificity so that is seems to exclude subjects who are not overweight or obese, but it has poorer sensitivity, for example the BMI might provide a higher valve than would be accurate in stunted children, suggesting better nutritional status than is actually in the case.

A limitation of BMI however is that it cannot differentiate an obese individual from a muscular one. It also cannot locate the site of fat eg. people with 'central obesity' may have normal BMI.

Inspite of some limitations, BMI as of now appears to be the most practical method of measuring and comparing obesity for clinical and epidemiological purposes.

BMI classification of children and adolescents[18]

BMI percentile for age	Weight status
<5th percentile	Under weight
5th – 84th percentile	Normal weight
85th – 94th percentile	At risk for over weight
≥ 95th percentile	Over weight

BMI BASED CLASSIFICATIONS OF OVER WEIGHT AND OBESITY.

1. **WHO classification (for adults)[17]**

   BMI >25 = over weight

   BMI >30 = obesity

2. **As per IOTF classification (for adults)[19,20]**

   BMI >22 = over weight

   BMI >25 = obesity

3. **NCHS / CDC chart from US (for children)**

   85th percentile of BMI for age & sex as a reference point for over weight and the 95th percentile for obesity in children [21,22]

BMI values for adults, are age independent and same for both sexes. However in children, substantial physiological changes of BMI with age and sex are well known. At birth the median BMI is as low as 13kg / m^2 increasing to 17kg/m^2 at age 1, decreasing to 15.5kg/m^2 at age 6, then increasing to 21kg/m^2 at age 20. Many countries have published BMI for age charts for their populations, and some have also defined cut-off points on these charts to define overweight and obesity.

A recent Indian study by Agarwal et al[23] has described indices including BMI and skin fold thickness for affluent Indian school children. However, the sample size of the study is probably not large enough to generate internationally accepted standards and they are not proposed as standard BMI charts for children in India by Indian academy of pediatrics.[24]

Other markers of obesity:

There are other markers and measures of obesity like

1) Skin for thickness(SFT)
2) Waist circumference
3) Waist – hip ratio

4) Bio-electrical impedence analyses

5) Dual energy X-ray absorptiometry (DEXA)

6) Air displacement plethysmography (BOD-POD)

7) MRI and CT

Consistent use of the BMI growth chart aids in early identification of children at risk for later obesity.

BLOOD PRESSURE

The prevalence and rate of diagnosis of hypertension in children and adolescents appears to be increasing[16]. This is due in part to the increasing prevalence of childhood obesity as well as growing awareness of this disease. There is evidence that childhood hypertension can lead to adult hypertension[25] Hypertension is a known risk factor for coronary artery disease (CAD) in adult, and the presence of childhood hypertension may contribution to the early development of CAD[26].

Data associating childhood hypertension with cardiovascular risk in adulthood are lacking. Reports have shown an association between blood pressure and body mass index (BMI)[27,28], suggesting that obesity is a strong risk factor for developing childhood

hypertension. There are insufficient data that define the role of race and ethnicity in childhood hypertension, although results of several studies[29,30,31] show black children having higher blood pressure than white children. Heritability of childhood hypertension is estimated at 50 percent[32]. One report[33] noted that 49 percent of patients with primary childhood hypertension had a relative with primary hypertension and that 46 percent of patients with secondary childhood hypertension had a relative with secondary hypertension. Another report[34] showed that in adolescents with primary hypertension there is an overall 86 percent positive family history of hypertension.

In children hypertension is defined statistically because blood pressure levels vary with age and gender and because outcome based data are not available for this population.

An update of recommendations for diagnosis, evaluation and treatment of childhood hypertension is provided in the fourth report by the National High Blood Pressure Education Programme (NHBPEP) working group on High blood pressure in children and adolescents[35] (2004) and it has recommended the following definitions:

1. Hypertension is defined as systolic and / or diastolic pressure levels that are greater than the 95th percentile for age and gender on at least three occasions. As with adults, adolescents with blood pressure levels ≥ 120/80 mmHg are considered hypertensive even if they are less than the 95th percentile.

2. Prehypertension is defined as an average systolic and/or diastolic pressure between the 90th and 95th percentile for age and gender.

3. When the blood pressure reading is above the 95th percentile, one could further classify the hypertension into stage 1 and 2 as follows:

    a. Stage 1 hypertension is present when blood pressure readings are between the 95th and 99th percentiles.

    b. Stage 2 hypertensions is present when blood pressure readings are 5mmHg or more above the 99th percentile values.

4. "White coat hypertension" is present when blood pressure reading in health care facilities are greater than the 95th percentiles but are normotensive outside a clinical setting.

Classification of blood pressure for adults and children

Blood pressure classification	Adults		Children and[35] adolescents
	Systolic blood pressure	Diastolic blood pressure	
Normal	<120	<80	<90th percentiles
Pre Hypertension	120-139	80-89	90th -95th percentiles
Stage 1 Hypertension	140-159	90-99	95th – 99th percentiles
Stage 2 Hypertension	≥ 100	≥ 100	≥ 5mmHg + 99th percentile value

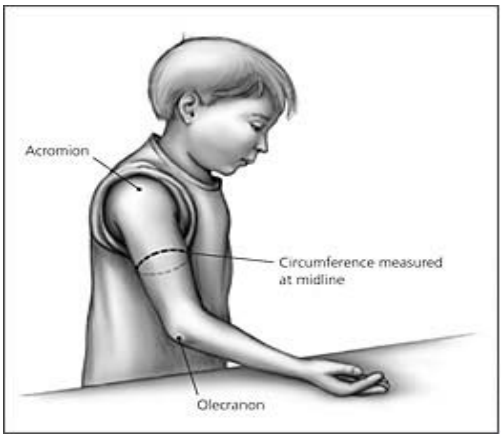
BLOOD PRESSURE MEASUREMENTS IN CHILDREN :

According to the NHBPEP recommendations, children three years of age or older should have their blood pressure measured when seen at a medical facility[35], however, according to the U.S. Preventive Service Task Force (USPSTF), there is insufficient evidence to recommend for or against routine screening for childhood hypertension to reduce the risk of CAD.

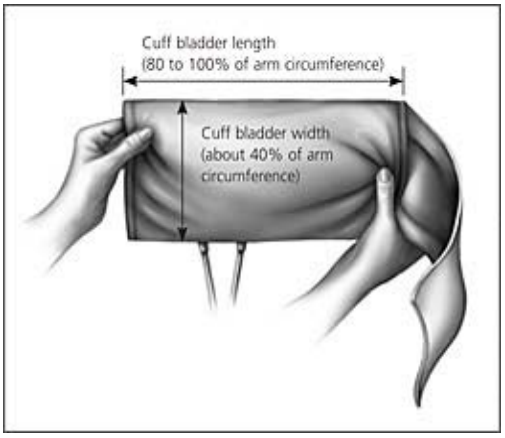
Measuring of blood pressure in children is a special task. The preferred method for blood pressure measurement is auscultation. Correct measurement of blood pressure requires use of a cuff that is appropriate to the size of the child's upper right arm. By convention, an appropriate cuff size is one with an inflatable bladder width that is at least 40 percent of the arm circumference at a point midway between the olecranon and the acromion. The cuff bladder length should cover 80 to 100 percent of the circumference of the arm[35]. Such a requirement demands that the bladder width – to – length ratio be at least 1:2. Not all commercially available cuffs are manufactured with this ratio.

Recommended dimensions for blood pressure cuff bladders

AGE	Width (cm)	Length (cm)	Maximum Arm Circumference (cm)
New Born	4	8	10
Infant	6	12	15
Child	9	18	22
Small Adult	10	24	26
Adult	13	30	34
Large Adult	16	38	44
Thigh	20	42	52



Arm circumference should be measured midway between olecranon and acromial process



Blood pressure cuff showing size estimation based on arm circumference.

An oversized cuff can under estimate the blood pressure, whereas an undersized cuff can overestimate the measurement. Blood pressure should be measured in a controlled environment after five minutes of rest in the seated position with right arm supported at heart level. If the blood pressure is greater than the 90th percentile, the blood pressure should be repeated twice at the same office visit to test the validity of the reading.

Recommended Length of the Bladder Cuff

Methods of blood pressure measurement

Most devices for measuring blood pressure are dependent on one common feature namely, occluding the artery of an extremity (arm, wrist, finger or leg) with an inflatable cuff to measure blood pressure either oscillometrically, or by detection of Korotkoff sounds. Other techniques, which are not dependent on limb occlusion, such as pulse – wave form analysis, can also be used, but these have little application in clinical practice.

I. **Direct method:** Indwelling arterial (umbilical) catheter connected with a manometer provides BP. Useful in critically in new borns.

II. Indirect methods :

a. Palpatory method

b. Ausultatory method

c. Doppler method

d. Flush method

e. Oscillometry

Auscultatory method is the most commonly used method of measuring blood pressure. An inflatable cuff (Riva-Rocci cuff)[36] attached to a mercury manometer (sphygmomanometer) is wrapped around the arm and a stethoscope is placed over the brachial artery at the elbow. The cuff is rapidly inflated until the pressure in it is well above the expected systolic pressure in the brachial artery. The pressure in the cuff is lowered slowly. The cuff pressure at which the "tapping sound" first heard is the systolic pressure (K1). As the cuff pressure in lowered further, the sounds become louder, then dull, muffled and finally they disappear (K5). These are the sounds of Korotkoff. The NHBPEP working group (2004) recommends Korotkoff phase 5 (K5) as the diastolic pressure for both children and adults.

Variability of blood pressure

There are certain factors, which may cause variability in blood pressure from moment to moment with respiration, emotion, exercise, meals, tobacco, alcohol, temperature, bladder distension and pain, and that blood pressure also influenced by age, race and circadian variation[37].

Important factors affecting measurement

- The inherent variability of blood pressure
- The defence reaction
- The limitations of the device being used
- The accuracy of the device.

AIM OF STUDY

To assess the relationship between the Body Mass Index and the Blood Pressure in adolescent school children from three different localities (urban, semi urban and rural areas) in and around Madurai.

MATERIALS AND METHODS

Study place :

Higher secondary Schools in and around Madurai.

Study Period :

August 2008- July 2009 (12 Months)

Study Design:

Cross Sectional Study

Study Population:

Adolescent school children in the age group of 13-17years.

Sample Size:

2494 children including males 1338 and females 1156.

Conflict of Interest :

Nil.

Financial Support:

Nil.

Ethical Committee Clearance:

Obtained

Methodology:

Informed consent was obtained from parents and students for carrying out the anthropometric measurements.

Equipments used

1. Digital weighing machine capable of weighing upto 150 kgs with accuracy of 100gms.
2. Non stretchable measuring tape.
3. Sphygmomanometer, calibrated as 2mm divisions (Diamond).

Weight

It is the anthropometric measurement most in use. Equipment used must be sturdy, inexpensive, easily transportable and accurate to within the limits required (0.1 kgs).

The child was made to stand on the bathroom type weighing machine, in a straight position and the weight was measured and rounded down to the nearest 0.1 kg.

Height

In field of nutritional anthropometry total height of an individual is measured. A scale fixed to the wall can be used.

After removing shoes, the subject should stand on a flat floor by the scale with feet parallel and with heel, buttocks, shoulders and back of head touching the upright. The head should be held comfortably erect with the lower border of the orbit in the same horizontal plane as the external auditory meatus. The arm should be hanging at the sides in a natural manner. The height was measured and rounded down to the nearest 0.5 cm.

Blood pressure

Children were called for blood pressure measurement according to their classes and were given rest for 5 minutes. The procedure was explained briefly and demonstrated to them. The blood pressure was measured using a standardized mercury sphygmomanometer and recorded by trained personnel. Blood pressure was measured in sitting posture with the hands resting on the examining table with the cubital fossa supported at the level of the heart. The appropriate sized cuff with bladder width approximately 40% of the arm circumference midway between the olecranon and the acromion was applied to measure the blood pressure. Systolic and diastolic blood pressure were measured and the measurement was rounded down to the nearest two mmHg.

BMI was calculated as weight in kilograms divided by the square of height in meter. Sex and age specific BMI percentiles were calculated for each child using the centers for disease control and prevention (CDC) growth standard charts (2000). The children were divided into four groups; those with BMI $<5^{th}$ percentile were classified as "underweight"; those with $5^{th} – 84^{th}$ percentile as "normal weight"; $85^{th} – 94^{th}$ percentile as "at risk for overweight" and $\geq 95^{th}$ percentile as "overweight" (or) "Obese".

Children were compared with respect to BMI and BMI percentile. The SBP and DBP of children in each of the BMI percentile groups were compared. The correlation of SBP and DBP with BMI was evaluated within each group according to age and gender cumulatively.

STATISTICAL ANALYSIS:

Statistical evaluates of the results was performed using 'R' software open source. The mean values of weights, height, BMI and SBP and DBP was determined. Correlations between continuous variables were examined using pearson's correlation coefficient(r).

BMI CHART FOR BOYS

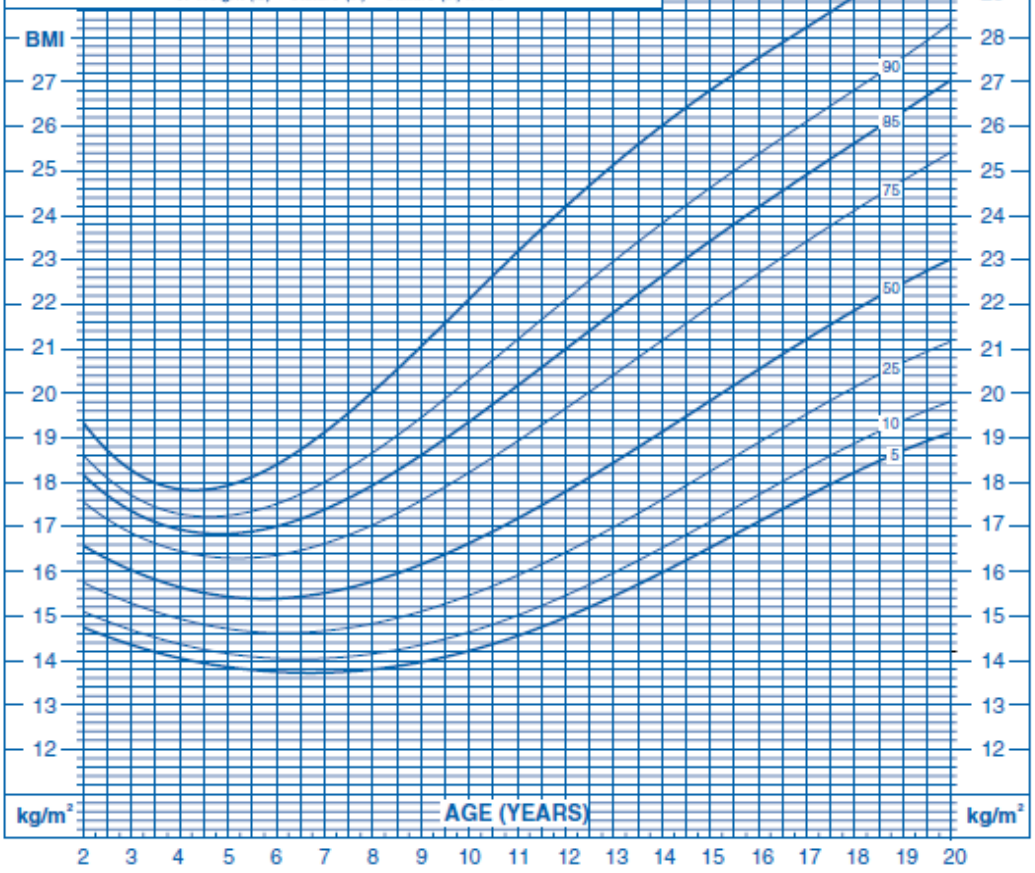
2 to 20 years: Boys
Body mass index-for-age percentiles

NAME _____

RECORD # _____

Date	Age	Weight	Stature	BMI*	Comments

*To Calculate BMI: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703

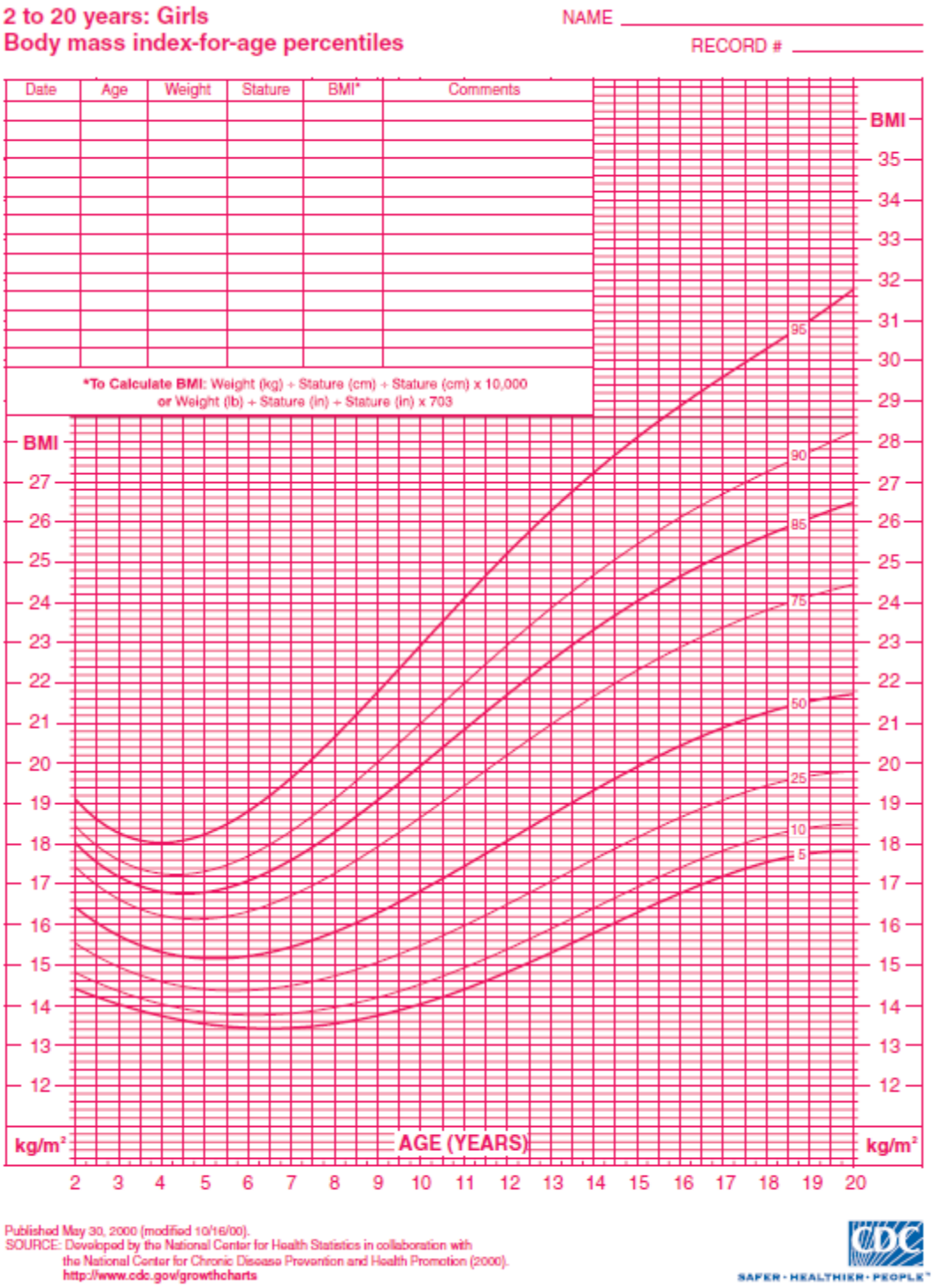


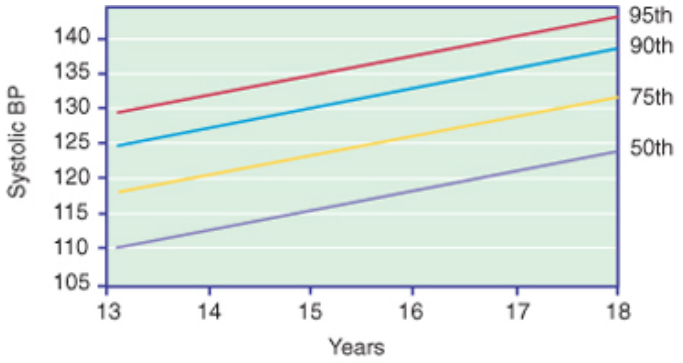
Published May 30, 2000 (modified 10/16/00).

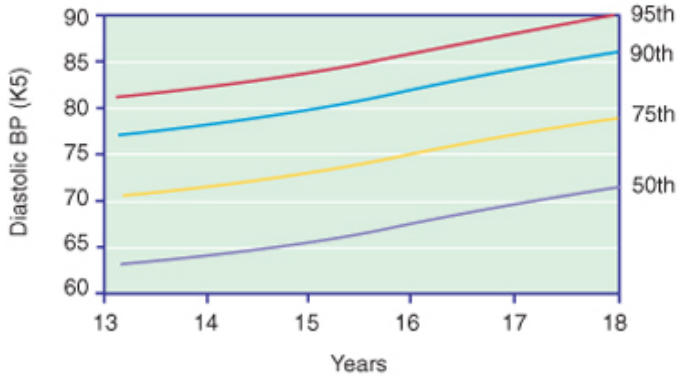
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

SAFER · HEALTHIER · PEOPLE™

BMI CHART FOR GIRLS

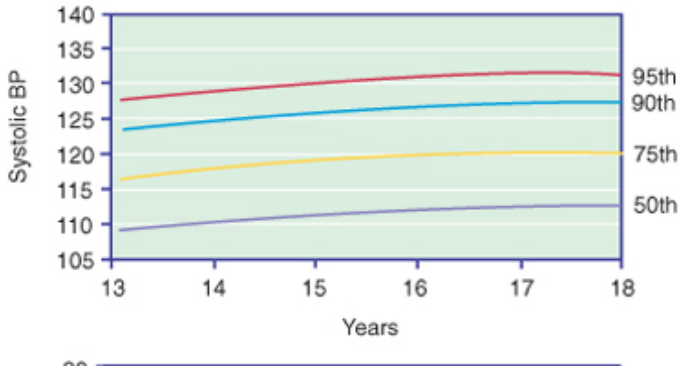


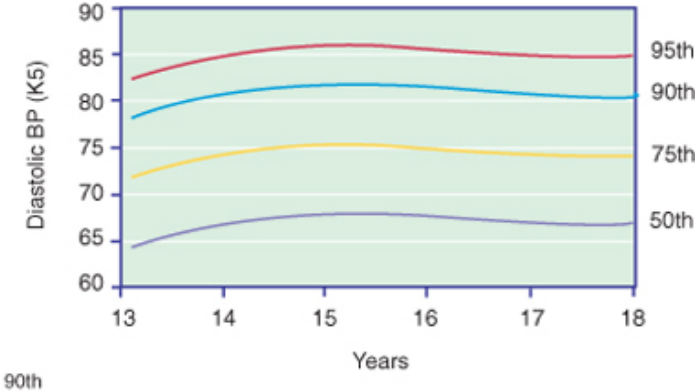




90th Perc						
Sys BP	124	126	129	131	134	136
Dias BP	77	78	79	81	83	84
Ht cm	165	172	178	182	184	184
Wt kg	62	68	74	80	84	86

A





90th Perc						
Sys BP	124	126	126	127	127	127
Dias BP	78	81	82	81	80	80
Ht cm	165	168	169	170	170	170
Wt kg	63	67	70	72	73	74

B

RESULTS AND ANALYSIS

Total number of students examined:

Totally 2494 children were included in the study. Of the total there were 1338 males (53.56%) and 1156 females (46.4%). Those belonging to rural school were 670 males (55.1%) and 546 females (44.9%), those belonging to Semi urban school were 472 males (56.9%) and 358 females (43.1%) and those belonging urban school were 196 males (43.8%) and 252 females (56.3%).

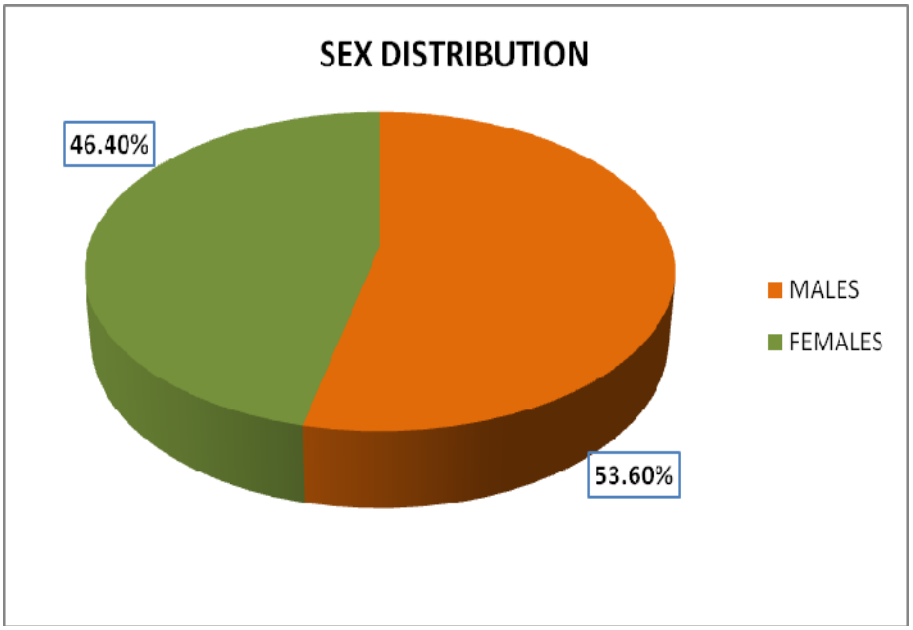


Figure – 1

TABLE 1

AGE WISE DISTRIBUTION

URBAN SCHOOL

Age	Males	Females	Total
13	37	50	87
14	56	91	147
15	50	51	101
16	36	37	73
17	20	20	40
Total	**196**	**252**	**448**

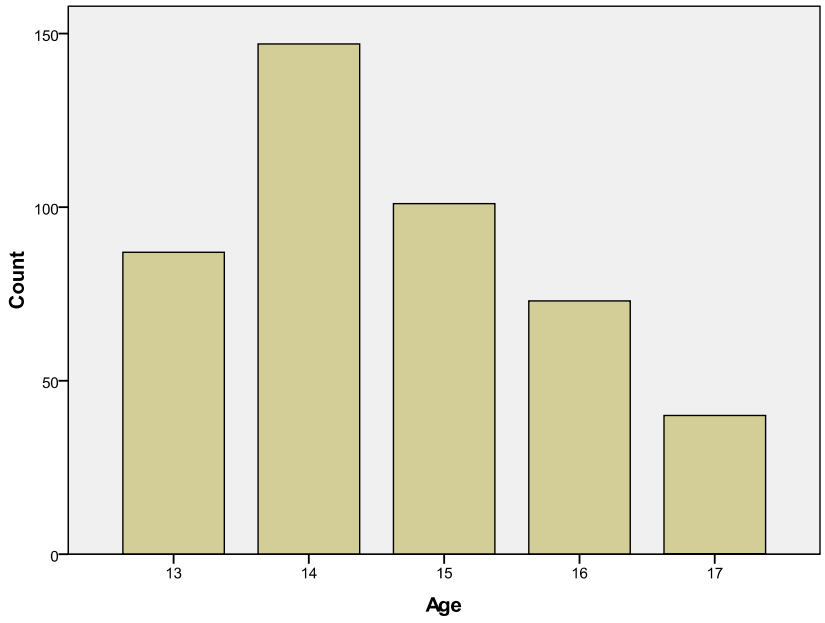


FIGURE – 2

TABLE 2

AGE WISE DISTRIBUTION

SEMI URBAN SCHOOL

Age	Males	Females	Total
13	79	63	142
14	99	83	182
15	88	68	156
16	111	99	210
17	87	53	140
Total	**472**	**358**	**830**

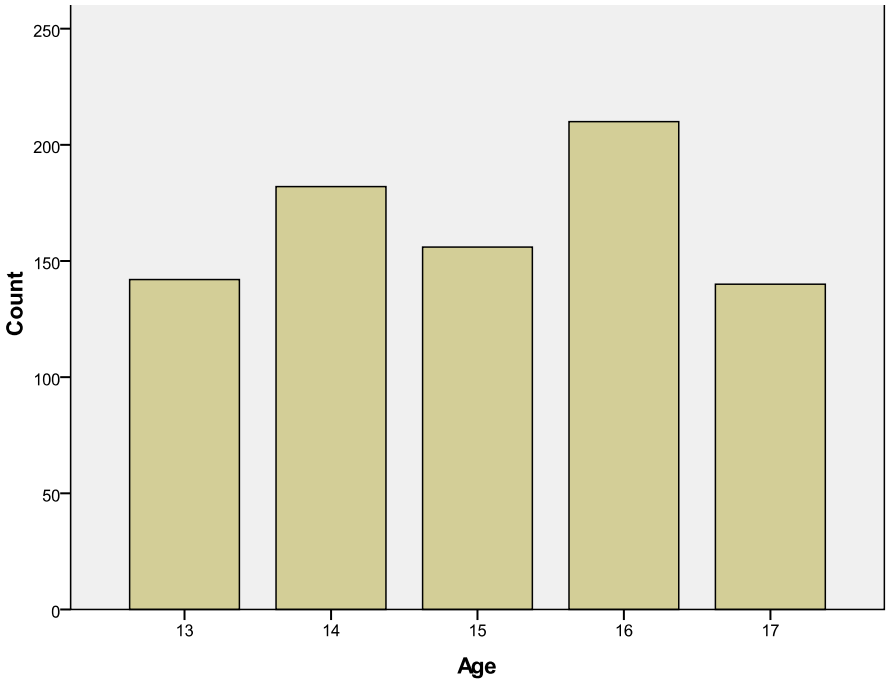


FIGURE – 3

TABLE 3

AGEWISE DISTRIBUTION

RURAL SCHOOL

Age	Males	Females	Total
13	112	109	221
14	147	131	278
15	169	118	287
16	122	108	230
17	121	79	200
Total	**670**	**546**	**1216**

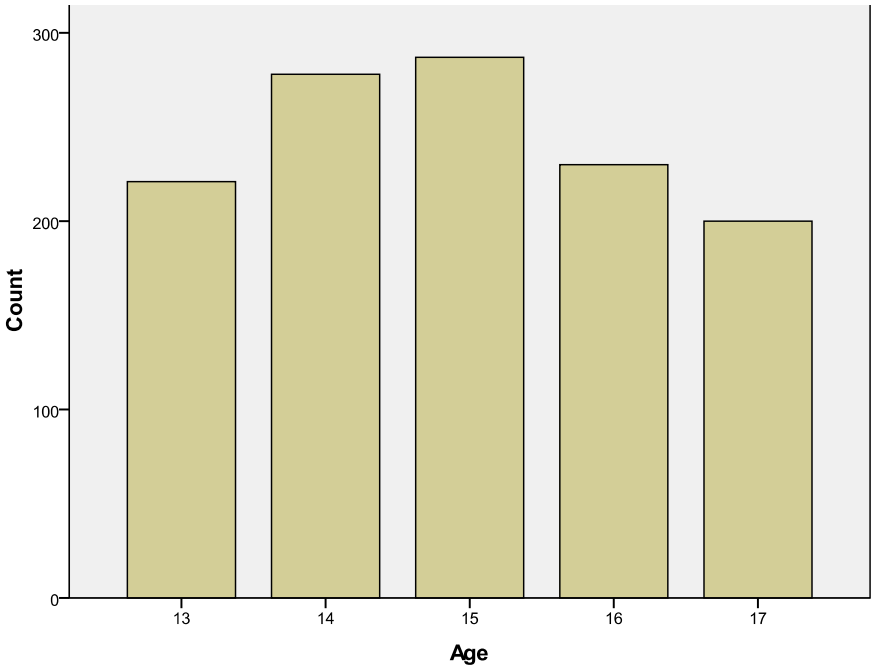


FIGURE – 4

TABLE 4

SEX DISTRIBUTION

School		Frequency	Percent
Urban school	Male	196	43.8
	Female	252	56.2
	Total	448	100.0
Semi urban school	Male	472	56.9
	Female	358	43.1
	Total	830	100.0
Rural school	Male	670	55.1
	Female	546	44.9
	Total	1216	100.0

TABLE 5

BMI DISTRIBUTION AMONG CHILDREN

URBAN SCHOOL

Percentiles	13 yrs		14 yrs		15yrs		16yrs		17yrs	
	M	F	M	F	M	F	M	F	M	F
<5th Percentile	12	4	13	12	6	4	4	2	1	2
5th -84th Percentile	18	36	33	60	41	39	21	28	17	17
85th – 94th Percentile	6	9	5	16	3	6	6	7	2	1
≥ 95th Percentile	1	1	5	3	2	-	-	-	-	-

Total Number of Children at risk for overweight is 61 ;

Males - 22 and Females - 39

Total Number of Children with Overweight is 12;

Males - 6 and Females - 6

TABLE 6

BMI DISTRIBUTION AMONG CHILDREN

SEMI URBAN SCHOOL

Percentiles	13 yrs		14 yrs		15yrs		16yrs		17yrs	
	M	F	M	F	M	F	M	F	M	F
<5th Percentile	27	14	29	12	15	6	34	24	22	6
5th -84th Percentile	44	42	16	61	64	58	74	34	64	45
85th – 94th Percentile	5	6	8	8	9	3	3	1	1	3
≥ 95th Percentile	3	1	0	3	0	1	0	0	-	-

Total Number of Children at risk for overweight is 47;

Males - 26 and Females – 21

Total Number of Children with Overweight is 8;

Males - 6 and Females - 2

TABLE 7

BMI DISTRIBUTION AMONG CHILDREN

RURAL SCHOOL

Percentiles	13 yrs		14 yrs		15yrs		16yrs		17yrs	
	M	F	M	F	M	F	M	F	M	F
<5th Percentile	60	36	62	11	81	23	44	21	53	17
5th -84th Percentile	49	68	81	112	81	93	78	82	68	60
85th – 94th Percentile	3	5	4	8	7	2	-	5	-	2
≥ 95th Percentile	-	-	-	-	-	-	-	-	-	-

33.5% of children were in the under weight group.

Total number of children at risk for overweight is 36 ;

Males - 14 and Females - 22

Total Number of Children with Overweight is Nil.

TABLE 8

AGEWISE MEAN BMI VALUES

Age	Urban School		Semi Urban School		Rural School	
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
13 yrs	19.2	17.9	17.2	17.6	15.7	16.7
14 yrs	19.2	19.7	17.5	19.2	16.5	18.7
15 yrs	19.2	20.1	18.7	19.3	17.1	18.2
16 yrs	19.8	21.5	18.5	19.1	17.9	19.1
17 yrs	19.6	21.6	19.0	19.7	17.9	19

Girls had more mean BMI than Boys in all age groups.

TABLE 9

BMI Vs MEAN SYSTOLIC AND MEAN DIASTOLIC BLOOD PRESSURE

BOYS

URBAN SCHOOL

	13Yrs		14Yrs		15Yrs		16Yrs		17yrs	
	Sys. BP	Dia. BP	Sys. BP	Dia. BP	Sys. BP	Dia. BP	Sys. BP	Dia. BP	Sys. BP	Dia. BP
<5th percentile	102.6	73.1	110.6	69.8	109	74	111.5	72	108	68
5th-84th percentile	110.8	74	113.4	75.1	117.7	75.88	113.2	73.8	114.9	70.52
85th-94th percentile	113.2	78	114	76	123.3	81.33	118.3	75	116	72
>=95th percentile	120	80	125.6	80.8	–	–	–	–	–	–

BMI Vs MEAN SYSTOLIC BLOOD PRESSURE

BOYS

URBAN SCHOOL

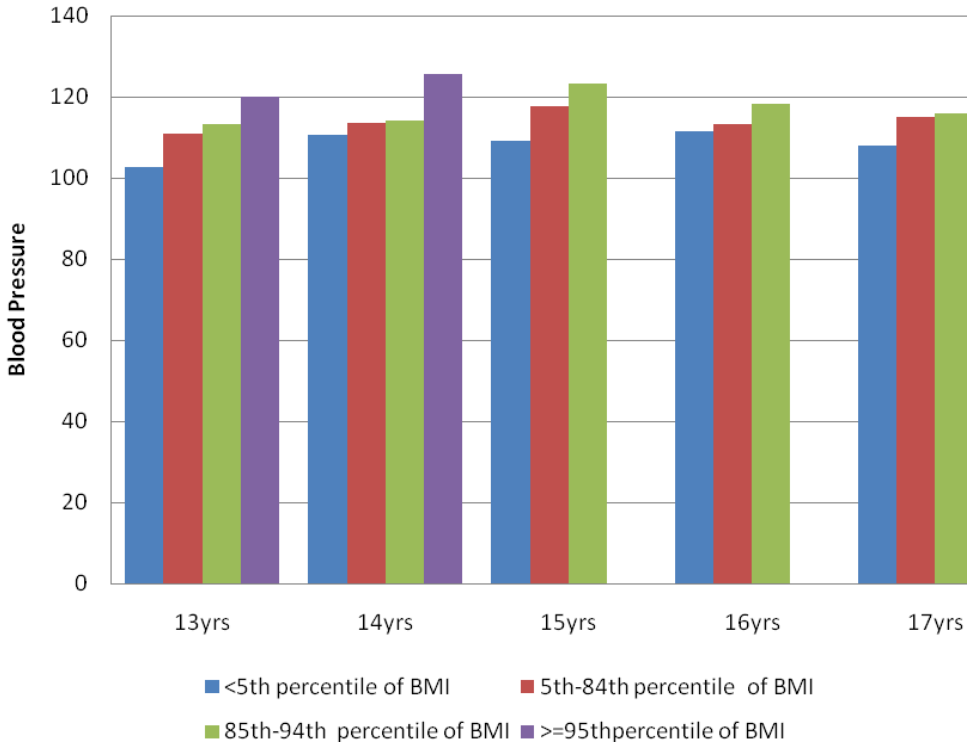


FIGURE -5

BMI Vs MEAN DIASTOLIC BLOOD PRESSURE

BOYS

URBAN SCHOOL

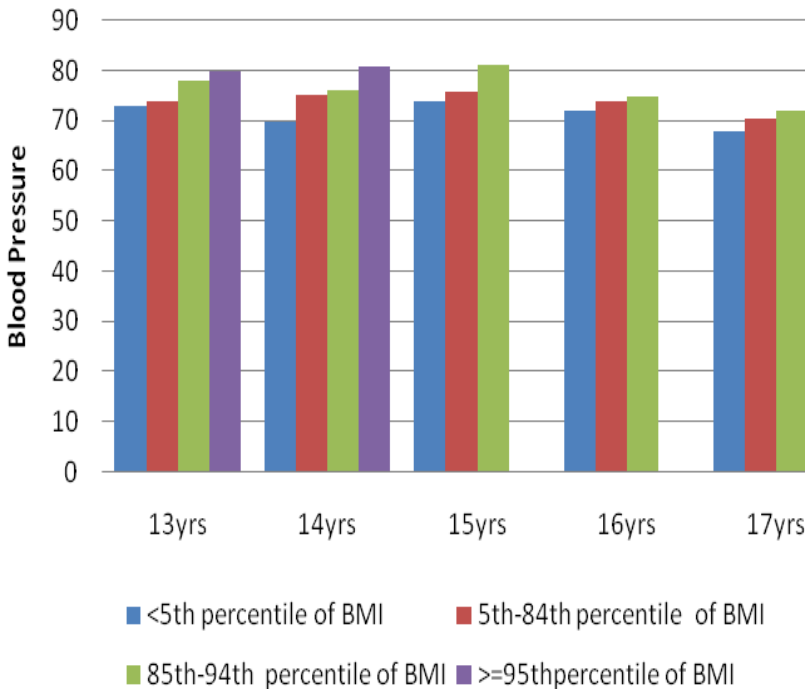


FIGURE -6

TABLE 10

BMI Vs MEAN SYSTOLIC AND MEAN DIASTOLIC

BLOOD PRESSURE

GIRLS

URBAN SCHOOL

	13Yrs		14Yrs		15Yrs		16Yrs		17Yrs	
	Sys. BP	Dia. BP	Sys. BP	Dia. BP	Sys. BP	Dia. BP	Sys. BP	Dia. BP	Sys. BP	Dia. BP
<5th percentile	104.6	70	108	69.23	109	70	110	72	115	75
5th-84th percentile	105.9	72	110.8	72.68	111.9	71.7	112.4	74.1	116.3	77.5
85th-94th percentile	112.8	76.5	111.8	74.25	120.6	78.33	118.8	79.7	124	82
>=95th percentile	116	80	118	78.66	122	82	_	_	_	_

BMI Vs MEAN SYSTOLIC BLOOD PRESSURE

GIRLS

URBAN SCHOOL

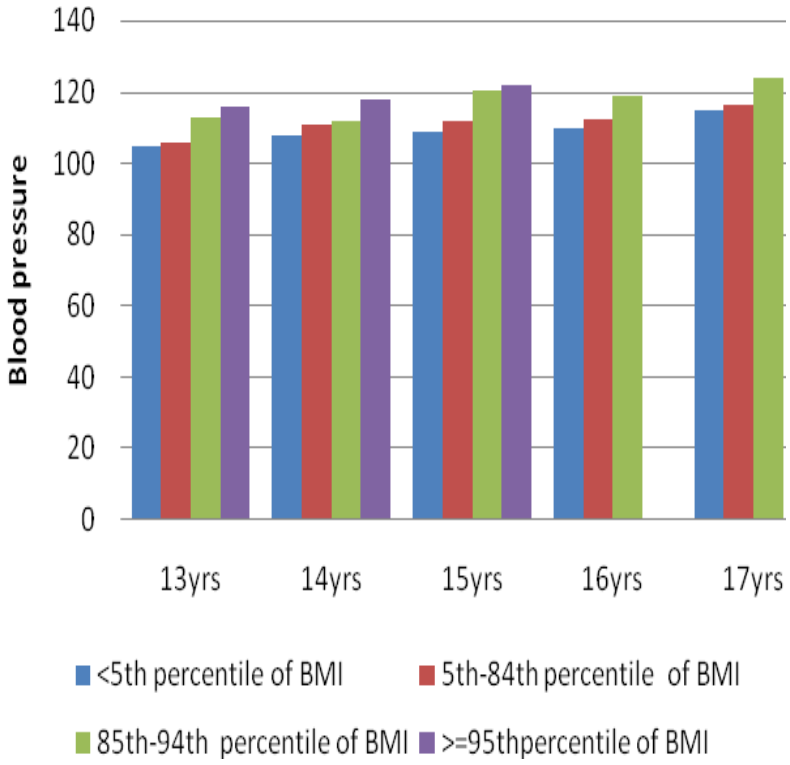


FIGURE 7

BMI Vs MEAN DIASTOLIC BLOOD PRESSURE

GIRLS

URBAN SCHOOL

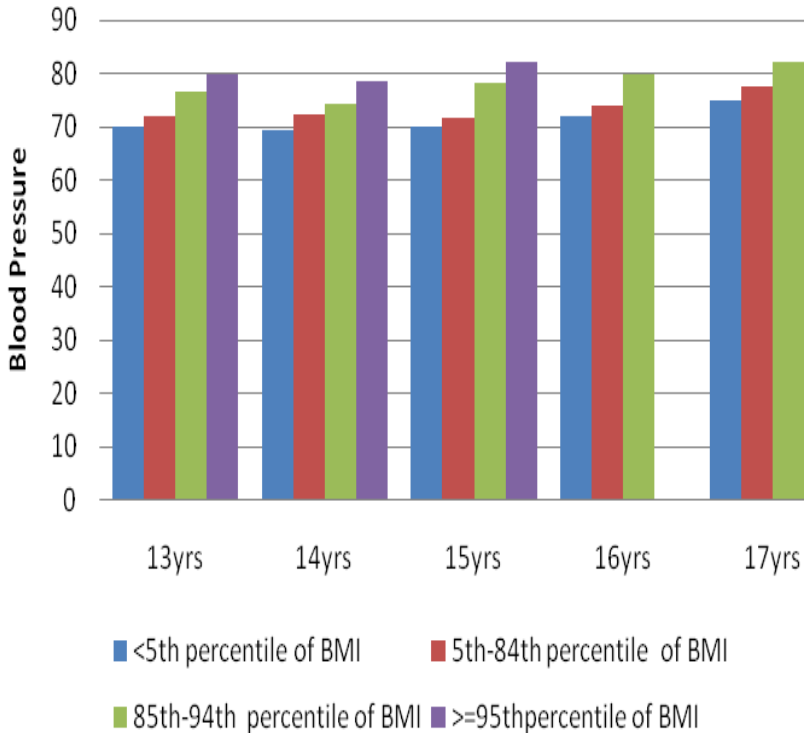


FIGURE 8

TABLE 11

BMI Vs MEAN SYSTOLIC AND MEAN DIASTOLIC BLOOD PRESSURE

BOYS

SEMI URBAN SCHOOL

	13Yrs		14Yrs		15Yrs		16Yrs		17Yrs	
	Sys. BP	Dia. BP	Sys. BP	Dia .BP	Sys. BP	Dia. BP	Sys. BP	Dia. BP	Sys. BP	Dia. BP
<5th percentile	105.1	66.6	109	66.2	110	69.3	114	72	118	80
5th-84th percentile	107.2	70.4	114	69.5	118	72	118	74.5	121	82
85th-94th percentile	118	76	120.2	72.8	120	76	124	78	126	84.6
>=95th percentile	126.6	83.3	124	76	122.2	77.4	126	79.2	_	_

BMI Vs MEAN SYSTOLIC BLOOD PRESSURE

BOYS

SEMI URBAN SCHOOL

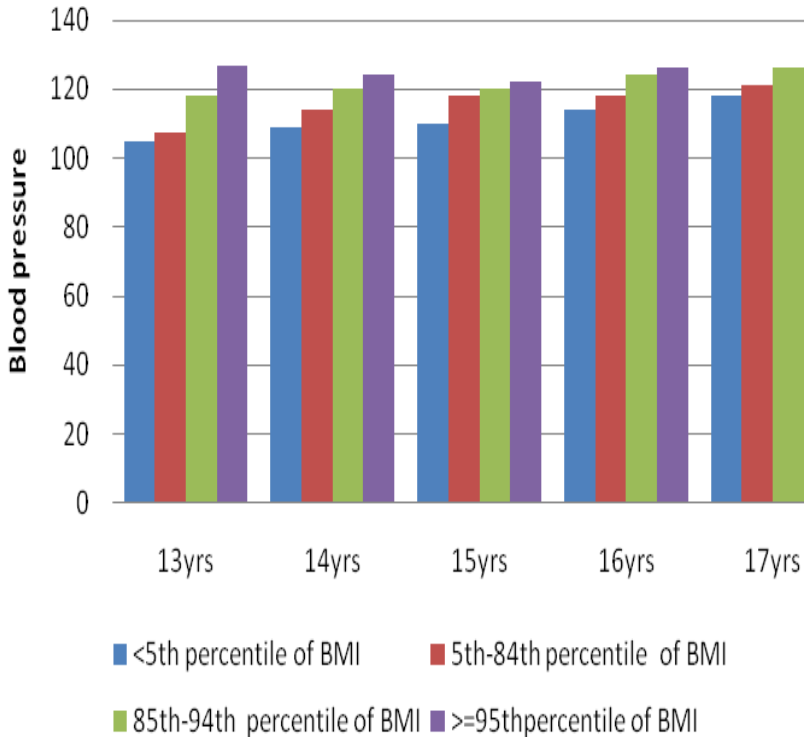


FIGURE 9

BMI Vs MEAN DIASTOLIC BLOOD PRESSURE

BOYS

SEMI URBAN SCHOOL

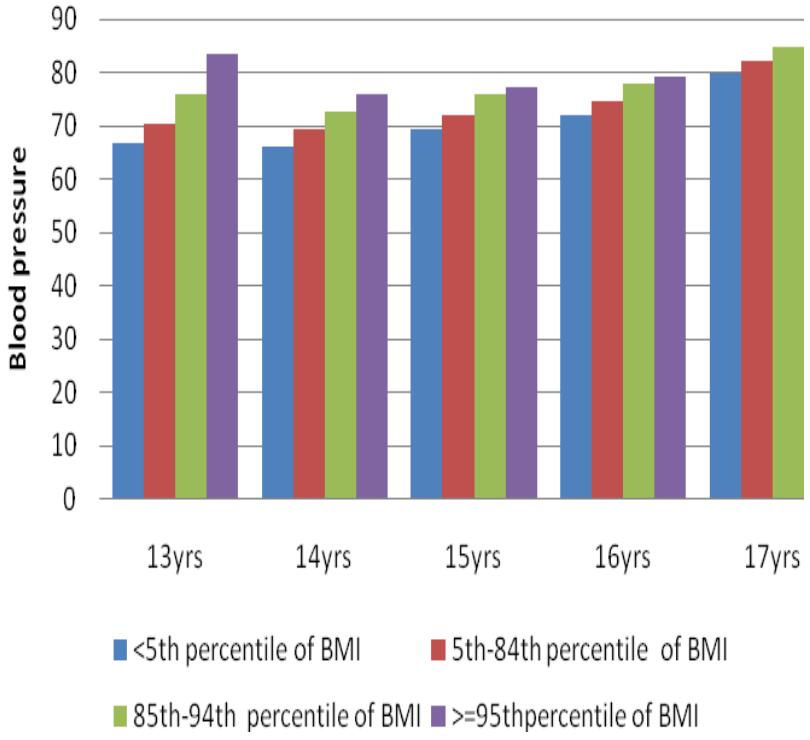


FIGURE 10

TABLE 12

BMI Vs MEAN SYSTOLIC AND MEAN DIASTOLIC

BLOOD PRESSURE

GIRLS

SEMI URBAN SCHOOL

	13Yrs		14Yrs		15Yrs		16Yrs		17Yrs	
	Sys. BP	Dia. BP	Sys. BP	Dia .BP	Sys. BP	Dia. BP	Sys. BP	Dia. BP	Sys. BP	Dia. BP
<5th percentile	105	70.6	111	70	115.7	73.7	116.6	75.1	113	75.4
5th-84th percentile	111.6	72.5	114	72	117	76	117	76.8	115.3	77.2
85th-94th percentile	115	75.1	116.8	74	118	76	119	77.8	116	78.3
>=95th percentile	110	77.3	120	76.5	120	78.7	120.8	79	_	_

BMI Vs MEAN SYSTOLIC BLOOD PRESSURE

GIRLS

SEMI URBAN SCHOOL

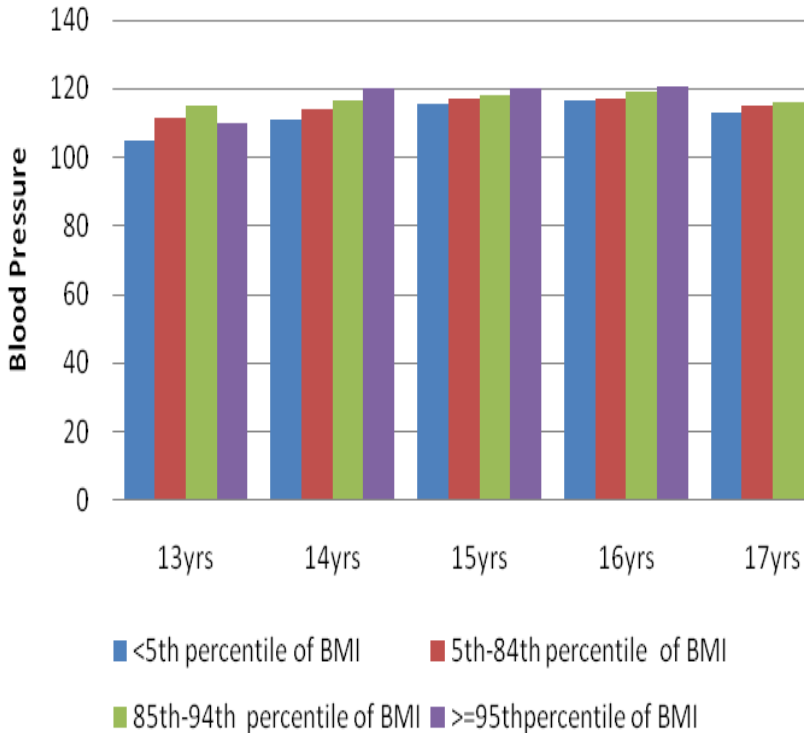


FIGURE 11

BMI Vs MEAN DIASTOLIC BLOOD PRESSURE

GIRLS

SEMI URBAN SCHOOL

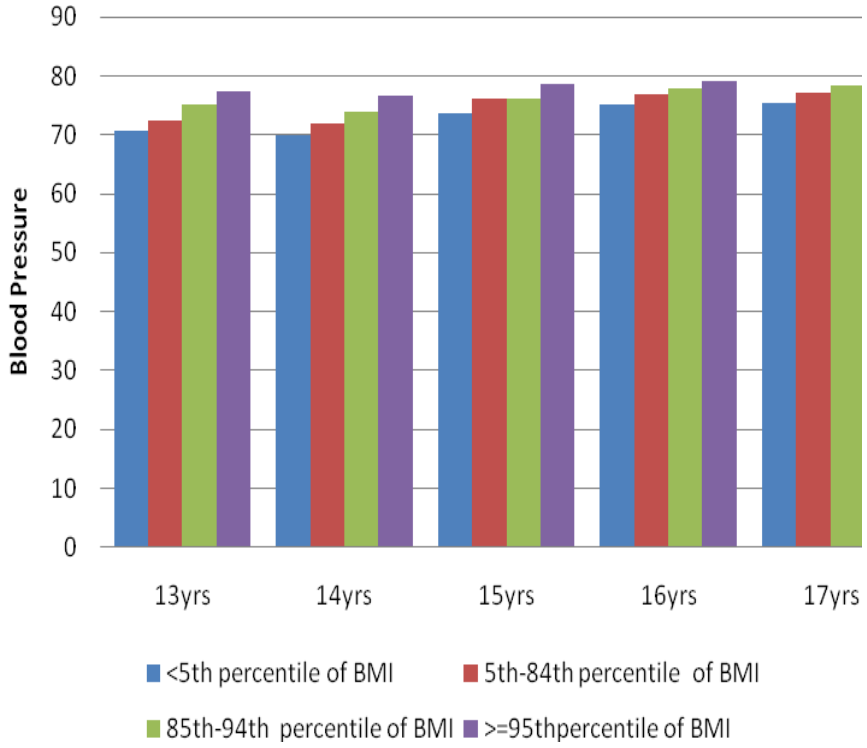


FIGURE 12

TABLE 13

BMI Vs MEAN SYSTOLIC AND MEAN DIASTOLIC

BLOOD PRESSURE

BOYS

RURAL SCHOOL

	13Yrs		14Yrs		15Yrs		16Yrs		17Yrs	
	Sys. BP	**Dia. BP**	**Sys. BP**	**Dia. BP**	**Sys. BP**	**Dia. BP**	**Sys. BP**	**Dia. BP**	**Sys. BP**	Dia. BP
<5th percentile	**97.5**	**65.7**	**101.9**	**66.9**	**105.1**	**68.9**	**113.1**	**71.6**	**107.7**	**70.9**
5th-84th percentile	**106.4**	**68.8**	**107.3**	**70.6**	**112.2**	**71.6**	**116.8**	**74.1**	**116.3**	**75.9**
85th-94th percentile	**110.0**	**73.3**	**115**	**73**	**122**	**77.7**	**-**	**-**	**-**	**-**
>=95th percentile	**-**	**-**	**-**	**-**	–	–	–	–	–	–

BMI Vs MEAN SYSTOLIC BLOOD PRESSURE

BOYS

RURAL SCHOOL

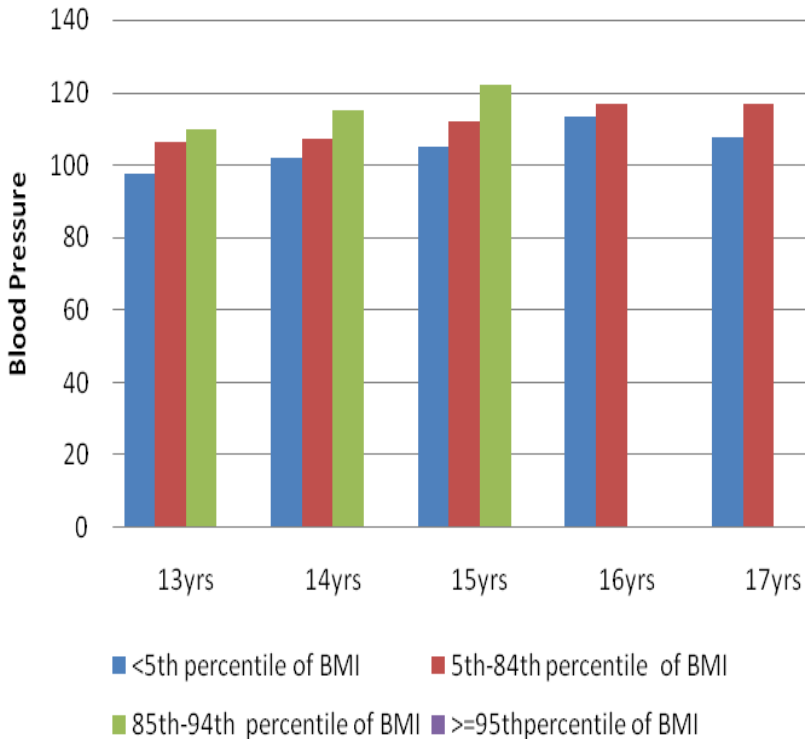


FIGURE 13

BMI Vs MEAN DIASTOLIC BLOOD PRESSURE

BOYS

RURAL SCHOOL

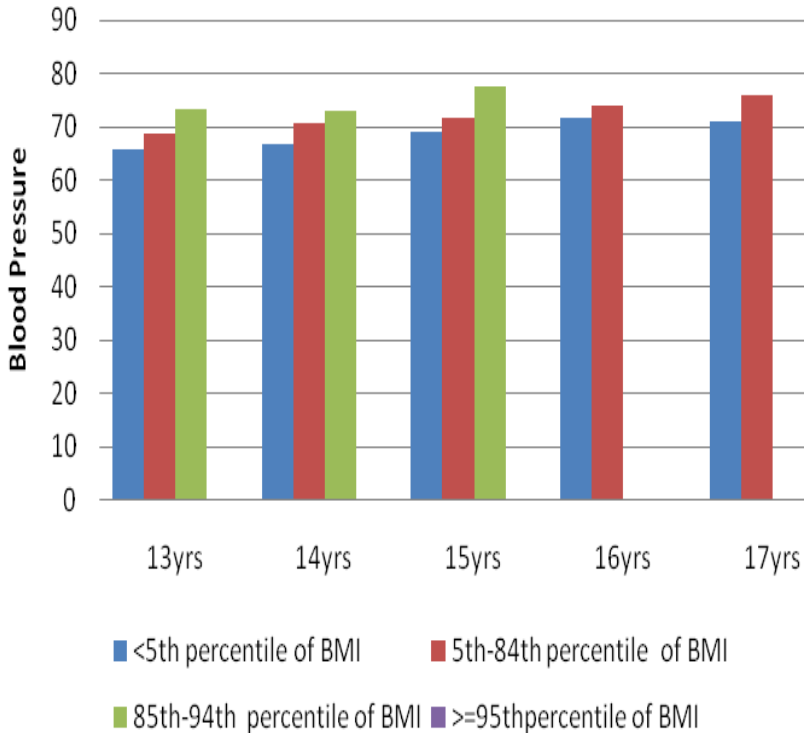


FIGURE 14

TABLE 14

BMI Vs MEAN SYSTOLIC AND MEAN DIASTOLIC

BLOOD PRESSURE

GIRLS

RURAL SCHOOL

	13Yrs		14Yrs		15Yrs		16Yrs		17Yrs	
	Sys. BP	Dia. BP	Sys. BP	Dia. BP	Sys. BP	Dia. BP	Sys. BP	Dia. BP	Sys. BP	Dia. BP
<5th percentile	102.7	70.3	104	70.5	109.9	72	104.1	72.7	110	72.4
5th-84th percentile	103.9	72.3	108.4	74.3	110.9	74.6	111.3	74.6	115	73.5
85th-94th percentile	110.8	76.8	112.5	76.7	123	78	122.8	78	119	80.8
>=95th percentile	--	--	--	--	--	--	--	--	--	--

BMI Vs MEAN SYSTOLIC BLOOD PRESSURE

GIRLS

RURAL SCHOOL

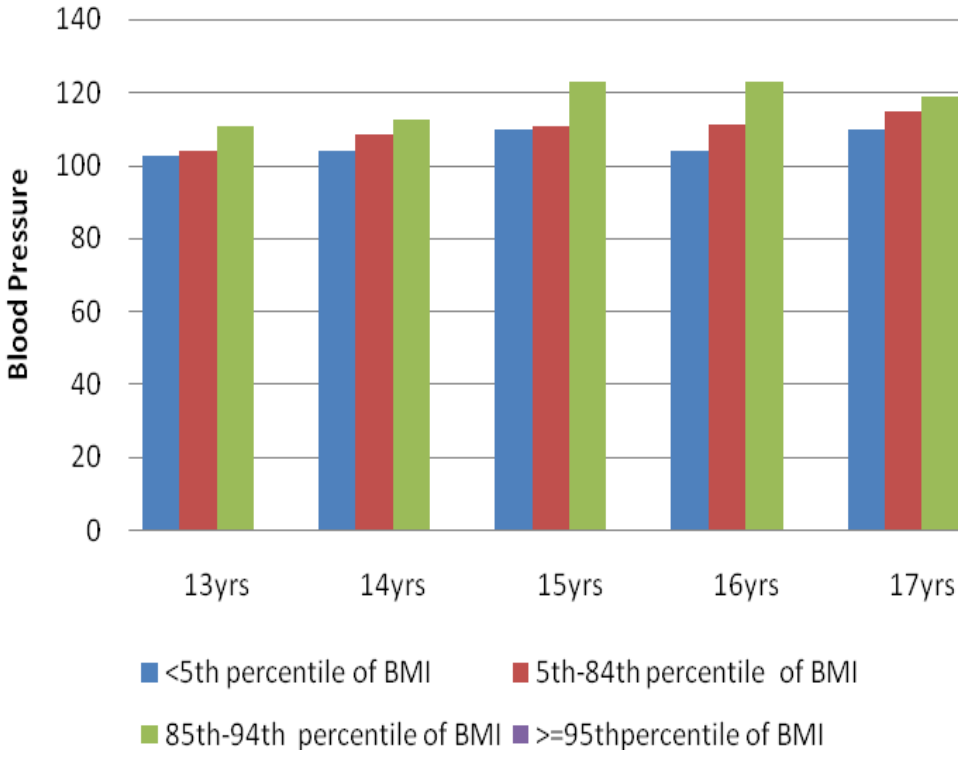


FIGURE 15

BMI Vs MEAN DIASTOLIC BLODD PRESSURE

GIRLS

RURAL SCHOOL

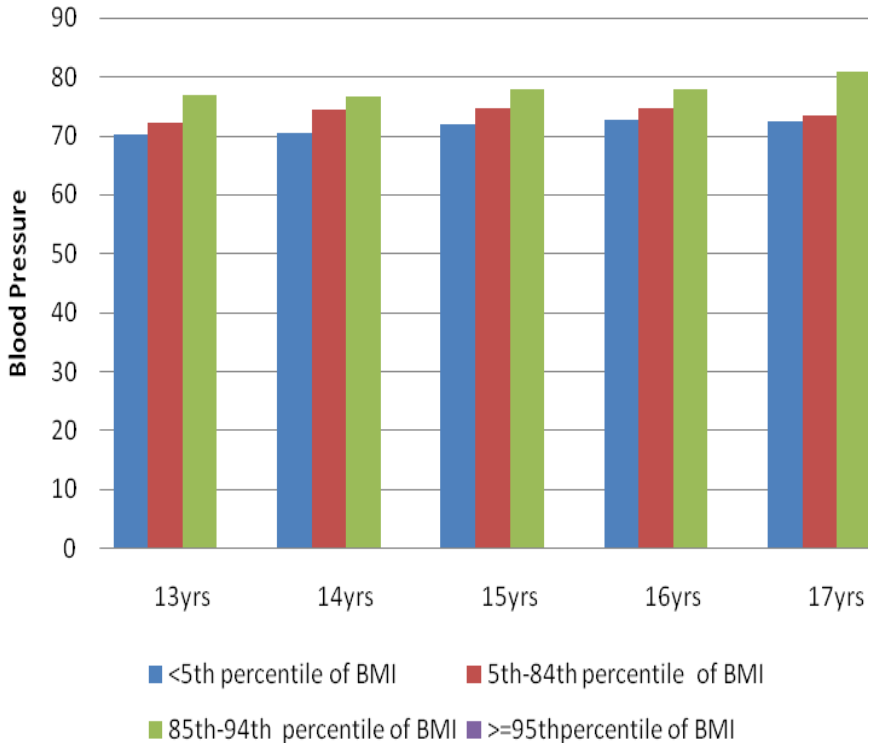


FIGURE 16

TABLE 15

MEAN VALUES OF HEIGHT, WEIGHT AND BMI AND THEIR STANDARD DEVIATION

School		N	Range	Minimum	Maximum	Mean	Std. Deviation
Urban School	HT	448	55	132	187	157.81	9.176
	WT	448	65	25	90	49.64	11.087
	BMI	448	29.0	7.3	36.3	19.732	3.6233
	Valid N (list wise)	448					
Semi Urban School	HT	830	58	129	187	152.36	10.292
	WT	830	54	23	77	43.61	9.423
	BMI	830	23.0	6.5	29.5	18.554	3.0276
	Valid N (list wise)	830					
Rural School	HT	1216	85	104	189	153.60	10.096
	WT	1216	69	22	91	41.93	9.076
	BMI	1216	16.0	12.1	28.1	17.606	2.6011
	Valid N (list wise)	1216					

TABLE 16

MEAN VALUES OF SYSTOLIC AND DIASTOLIC BLOOD PRESSURE AND THEIR STANDARD DEVIATION

School		N	Range	Minimum	Maximum	Mean	Std. Deviation
Urban School	SBP	448	54	86	140	112.19	9.607
	DBP	448	36	60	96	73.62	6.609
	Valid N (listwise)	448					
Semi Urban School	SBP	830	50	90	140	114.95	8.888
	DBP	830	40	60	94	74.13	7.144
	Valid N (listwise)	830					
Rural School	SBP	1216	68	78	140	108.84	11.319
	DBP	1216	50	48	92	71.78	7.774
	Valid N (listwise)	1216					

Table 17

Kruskal-Wallis Test

Ranks

	School	N	Mean Rank
BMI	Urban	448	1551.88
	Semi Urban	830	1326.18
	Rural	1216	1081.66
	Total	2494	

Test Statistics[a,b]

	BMI
Chi-Square	154.480
Df	2
Asymp. Sig.	0.000

a. Kruskal Wallis Test

b. Grouping Variable: School

There is statistically significant difference between the BMI and the schools

Table 18

CORRELATIONS BETWEEN BMI AND SYSTOLIC BLOOD PRESSURE

		BMI	**SBP**
BMI	Pearson Correlation	1	0.337**
	Sig. (2-tailed)		0.000
	N	2494	2494
SBP	Pearson Correlation	0.337**	1
	Sig. (2-tailed)	0.000	
	N	2494	2494

**Correlation is significant at the 0.01 level (2-tailed).

There is a statistically significant (p <0.01) correlation 0.34 between the BMI and SBP

Table 19

CORRELATIONS BETWEEN BMI AND DIASTOLIC

BLOOD PRESSURE

		BMI	DBP
BMI	Pearson Correlation	1	0.259**
	Sig. (2-tailed)		0.000
	N	2494	2494
DBP	Pearson Correlation	0.259**	1
	Sig. (2-tailed)	0.000	
	N	2494	2494

**Correlation is significant at the 0.01 level (2-tailed

There is a statistically significant (p <0.01) correlation 0.26 between the BMI and DBP

The study showed a positive correlation between BMI and mean systolic and diastolic blood pressure. The correlation co-efficient for SBP and DBP were 0.34 and 0.26 respectively p (<0.01).

DISCUSSION

The relationship between BMI and blood pressure is of crucial interest in evaluating both public health and the clinical impact of the so called obesity epidemic. In this study we have included 2494 children from three schools one each from urban, semi urban and rural area in and around Madurai. The purpose of our study is to find out the relationship between BMI and blood pressure in adolescent children. So, the study group was restricted to children in the age group of 13-17 years.

In this study, the height, the weight and the blood pressure of the children were measured along with systemic examination. From this the BMI was calculated in each child and they were classified based on age and sex specific BMI charts (WHO). The mean values of BMI, systolic and diastolic blood pressure were derived and analysed.

The present study showed the incidence of "at risk for overweight" was 5.8% and overweight /obesity was 0.8%. A higher percentage of girls than boys were at or above the 85^{th} percentiles of BMI. When compared with Western studies, the incidence of overweight and obesity were less in our study.

This study showed that, the mean BMI was significantly higher in urban and semi urban school children in all age groups when compared with rural school children. At the same time children from semi urban school had lesser BMI values than urban school children. In all these three study groups, girls had more BMI values than boys in their respective age group.

Children with BMI of "Normal Weight" i.e. 5^{th} – 84^{th} percentile of BMI form the major group in all the three schools. Compared with urban and semi urban school children, those belonging to rural school are found to be in the lower range of normal BMI in all age groups and also none of the age group had children with BMI of $\geq 95^{th}$ percentile in both sexes. Also 1/3 of children (33.5%) from rural school were "underweight" ie BMI of $<5^{th}$ percentile.

Compared with rural schools, more children from urban and semi urban schools fall in the BMI category of "risk for overweight" ie 85^{th} – 94^{th} percentile of BMI. Overall Girls outnumbered boys in this category, (Girls – 7% and Boy – 4.6%) whereas boys are more in the overweight / obese group: $\geq 95^{th}$ percentile of BMI (Boys – 0.97% and Girls – 0.69%). But these difference were not statistically significant.

Children from urban school, belonging to 'over weight' group in both sexes had the systolic blood pressure in high normal range and the diastolic blood pressure was beyond the 90th percentile but less than 95th percentile for their age and sex specific blood pressure norms. This is true in the immediate transition from childhood to adolescent period. In semi urban area also the same trend exist.

In rural children, as said earlier in the BMI analysis, none of the age group had children with BMI of ≥95th percentile and only the early adolescent age group had children with BMI values at risk for over weight ie 85th – 94th percentile. The children from rural school had their blood pressure readings well below the 90th percentile of age specific BP in all age groups and both sexes. Here again, the diastolic blood pressure is more in girls that boys in each age groups.

In our study, 38 children had blood pressure more than 95th percentile, which amounts to 1.52%. The earlier study done in our institution by Shanmugasundaram et al[38], showed the incidence of hypertension among children was 1%.

The study shows that, children from urban and semi urban schools had more BMI and blood pressure recordings than rural school children. Studies showed habits and life style have influence on the

body mass of children[39]. The fast food and junk food consumption and sedentary life style in the form of lack of physical exercise and spending more time with computers and indoor games could contribute to the higher BMI values in the urban and semi urban children. On the contrary in rural areas children have more physical activity in the form of approaching their schools by walk and helping in the house hold works and form work etc. which keep their BMI on lower range. Children with BMI $<5^{th}$ percentile is more in the rural school children, indicating the prevalence of under nutrition in the rural population.

The present study demonstrated the significant association between BMI and blood pressure in all age groups. The association of high blood pressure with increasing BMI status was present in all age groups. Zuhal Gundogdu et al[(40)] and Falkner et al[(41)] have also reported a similar finding in all groups as in our study.

The positive correlation of blood pressure and higher BMI values in children has also been observed in other studies. Soraf and Daniel et al[(13)] reported that, among all demographic and clinical factors analysed, BMI was most strongly associated with hypertension. Burke et al[(42)] recently described an independent association between high blood pressure and overweight and obesity, as defined by

International Obesity Task Force, in a prospective study carried out in an Australian Cohort of children followed up from age 9 to 25 years, as did Genovesi et al [43] in a cross – sectional study carried out in a sample of school children living in northern Italy.

Most studies have demonstrated prevalence of elevated blood pressure or hypertension with successive the increased BMI percentile, even within normal range of BMI[42,44]. Reports of Paradis and colleagues indicated that BMI was consistently associated with SBP and DBP in all age and gender group[45].

The result of the present study indicated that after adjustment for age and gender there was a positive and significant correlation between BMI and blood pressure in all age groups of adolescents participated in this study ($P<0.01$). In these groups the correlation coefficients (r) between BMI, SBP and DBP were 0.34 and 0.26 respectively.

Our study indicated that age and BMI are strongly associated with both systolic and diastolic blood pressure in both sexes and sex is not associated with SBP and DBP. As a result it can be concluded that, the impact or effect of BMI on SBP and DBP is similar in girls and boys.

CONCLUSION

- The overall incidence of "at risk for overweight" and "overweight/obesity" was 5.8 and 0.8% respectively.
- Girls are more in the category of "at risk for overweight" than boys whereas boys dominate in the overweight / obese group in their respective age.
- The incidence of overweight and obesity is more in urban and semi urban school children.
- About 1/3 of children from rural school were underweight.
- 1.52% children in our study had hypertension.
- Incidence of obesity among rural school children in our study in nil.
- Age and BMI has strong influence on blood pressure. Sex doesn't have statistically significant association.

- ❖ BMI is significantly associated with SBP and DBP in both sexes, even within BMI groups. This suggest that obesity is a strong risk factor for developing hypertension in both sexes and this finding emphasize the importance of the prevention of obesity in children and adolescents.

SUGGESTION

The outcome of the study recommends to do annual anthropometric measurement of children in schools to detect increment in BMI and developing overweight, thereby helping to prevent obesity and its complications.

Sedentary life style should be discourage in children.

Life style modification by means of weight reduction, exercise promotion, dietary modification and appropriate health education need to be stress upon from childhood for primordial / primary prevention of hypertension, so that these risk factors can be eliminated at the root.

Similar studies with large sample size including different population at multicentric level in our country could enable us to derive the BMI values for our own children and prepare separate BMI chart for our country.

STATISTICS OF RURAL SCHOOL - MADURAI

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
1	13	F	150	38	13.3	110	86		38	13	F	145	33	15.7	110	70		75	13	F	145	37	18	110	80
2	13	F	157	50	20.3	110	72		39	13	F	130	24	14.2	92	68		76	13	F	155	45	19	110	70
3	13	F	140	40	20.4	106	82		40	13	F	145	41	19.5	90	60		77	13	F	144	46	22	116	80
4	13	F	165	43	15.8	110	70		41	13	F	160	43	16.8	98	62		78	13	F	145	34	16	100	70
5	13	F	148	35	16	102	74		42	13	F	143	34	16.6	100	70		79	13	F	155	75	23	120	80
6	13	F	145	40	19	100	70		43	13	F	143	36	17.6	120	70		80	13	F	142	35	17	110	70
7	13	F	147	40	18.5	84	64		44	13	F	150	38	16.9	100	70		81	13	F	151	50	22	112	80
8	13	F	143	30	14.7	100	70		45	13	F	157	36	14.6	100	80		82	13	F	149	30	14	90	60
9	13	F	135	34	18.7	112	84		46	13	F	130	25	14.8	102	68		83	13	F	141	25	13	100	70
10	13	F	150	39	17.3	108	64		47	13	F	135	29	15.9	82	68		84	13	F	144	30	15	90	62
11	13	F	147	40	18.5	100	70		48	13	F	137	31	16.5	86	86		85	13	F	143	30	15	108	72
12	13	F	143	29	14.2	98	64		49	13	F	145	31	14.7	100	64		86	13	F	146	35	16	100	70
13	13	F	142	30	14.9	94	72		50	13	F	135	33	18.3	100	60		87	13	F	139	35	18	120	70
14	13	F	145	48	22.8	110	70		51	13	F	145	33	15.7	92	60		88	13	F	142	30	15	104	70
15	13	F	143	29	14.2	90	70		52	13	F	146	30	14.1	100	70		89	13	F	145	35	17	110	70
16	13	F	138	28	14.7	90	60		53	13	F	147	30	13.9	110	70		90	13	F	145	55	26	110	80
17	13	F	145	26	12.4	102	68		54	13	F	152	40	17.3	100	70		91	13	F	144	30	15	100	80
18	13	F	146	30	14.1	94	64		55	13	F	145	34	16.2	94	72		92	13	F	150	44	20	110	70
19	13	F	140	36	18.4	102	72		56	13	F	139	24	12.4	90	70		93	13	F	146	30	14	102	68
20	13	F	140	28	14.3	90	70		57	13	F	147	34	15.7	110	70		94	13	F	149	45	20	112	74
21	13	F	149	32	14.4	100	70		58	13	F	142	30	14.9	110	70		95	13	F	145	35	17	118	80
22	13	F	144	31	14.9	110	70		59	13	F	141	30	15.1	90	70		96	13	F	146	39	18	100	70
23	13	F	153	41	17.5	98	60		60	13	F	150	37	16.4	92	60		97	13	F	145	33	16	110	80
24	13	F	150	35	15.6	88	64		61	13	F	144	47	22.7	110	84		98	13	F	146	35	16	112	80
25	13	F	147	30	13.9	100	70		62	13	F	153	45	19.2	90	70		99	13	F	136	30	16	84	60
26	13	F	148	27	12.3	100	70		63	13	F	154	52	21.9	110	80		100	13	F	146	43	20	118	80
27	13	F	152	35	15.1	110	84		64	13	F	128	23	14	120	80		101	13	F	147	35	16	110	80
28	13	F	146	39	18.3	120	70		65	13	F	150	36	16	112	70		102	13	F	143	39	19	110	70
29	13	F	149	38	17.1	100	70		66	13	F	156	40	16.4	120	90		103	13	F	140	38	19	110	60
30	13	F	151	42	18.4	100	70		67	13	F	150	36	16	90	70		104	13	F	143	40	20	100	70
31	13	F	142	36	17.9	110	70		68	13	F	154	44	18.6	110	70		105	13	F	139	30	16	90	60
32	13	F	144	37	17.8	100	60		69	13	F	157	35	14.2	90	70		106	13	F	150	45	20	100	70
33	13	F	145	32	15.2	100	70		70	13	F	146	35	16.4	100	70		107	13	F	146	37	17	120	80
34	13	F	145	32	15.2	100	70		71	13	F	130	40	23.7	104	70		108	13	F	140	30	15	110	70
35	13	F	140	28	14.3	110	72		72	13	F	142	34	16.9	110	80		109	13	F	140	30	15	100	60
36	13	F	146	40	18.8	100	70		73	13	F	145	30	14.3	110	70		110	14	F	144	38	18	100	70
37	13	F	147	34	15.7	84	54		74	13	F	140	30	15.3	110	72		111	14	F	147	38	18	100	70

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
112	14	F	135	26	14.3	92	58		149	14	F	146	45	21.1	100	60		186	14	F	147	36	17	110	80
113	14	F	146	37	17.4	110	70		150	14	F	147	47	21.8	110	80		187	14	F	154	40	17	104	70
114	14	F	152	35	15.1	100	70		151	14	F	153	45	19.2	110	70		188	14	F	150	40	18	100	70
115	14	F	148	44	20.1	106	84		152	14	F	151	40	17.5	90	70		189	14	F	152	55	24	98	60
116	14	F	145	34	16.2	102	72		153	14	F	150	40	17.8	100	70		190	14	F	158	45	18	116	80
117	14	F	152	43	18.6	110	60		154	14	F	156	52	21.4	110	70		191	14	F	150	40	18	100	70
118	14	F	157	44	17.9	108	72		155	14	F	142	35	17.4	100	60		192	14	F	150	38	17	90	70
119	14	F	165	40	14.7	118	70		156	14	F	156	47	19.3	100	70		193	14	F	154	35	15	94	70
120	14	F	144	34	16.4	100	70		157	14	F	151	37	16.2	100	70		194	14	F	146	31	15	110	62
121	14	F	148	40	18.3	102	76		158	14	F	149	45	20.3	110	70		195	14	F	146	30	14	100	78
122	14	F	142	38	18.8	120	80		159	14	F	150	48	21.3	100	70		196	14	F	146	35	16	120	80
123	14	F	151	55	24.1	110	80		160	14	F	144	40	19.3	120	80		197	14	F	153	45	19	112	68
124	14	F	149	57	25.7	120	80		161	14	F	154	45	19	100	70		198	14	F	149	35	16	110	76
125	14	F	149	56	25.2	130	70		162	14	F	145	35	16.6	100	80		199	14	F	149	45	20	110	68
126	14	F	143	45	22	112	72		163	14	F	147	55	25.5	110	70		200	14	F	156	45	19	120	74
127	14	F	147	36	16.7	120	84		164	14	F	152	46	19.9	100	70		201	14	F	143	35	17	108	70
128	14	F	143	40	19.6	120	80		165	14	F	154	40	16.9	130	90		202	14	F	155	40	17	90	70
129	14	F	164	57	21.2	120	80		166	14	F	147	34	15.7	110	80		203	14	F	145	35	17	90	60
130	14	F	146	40	18.8	110	70		167	14	F	153	46	19.7	110	70		204	14	F	140	40	20	120	80
131	14	F	145	40	19	100	80		168	14	F	145	40	19	104	60		205	14	F	148	41	19	110	70
132	14	F	155	50	20.8	110	80		169	14	F	143	40	19.6	110	70		206	14	F	146	38	18	120	74
133	14	F	161	45	17.4	110	70		170	14	F	130	26	15.4	100	70		207	14	F	156	45	19	118	72
134	14	F	150	31	13.8	90	62		171	14	F	156	36	14.8	120	76		208	14	F	155	50	21	120	70
135	14	F	150	50	22.2	110	70		172	14	F	146	37	17.4	100	70		209	14	F	148	48	22	120	70
136	14	F	150	41	18.2	110	70		173	14	F	146	43	20.3	110	80		210	14	F	151	40	18	118	68
137	14	F	149	40	18	110	70		174	14	F	152	40	17.3	120	70		211	14	F	152	55	24	112	74
138	14	F	155	40	16.6	90	60		175	14	F	154	45	19	110	60		212	14	F	150	45	20	116	72
139	14	F	145	35	16.6	90	70		176	14	F	142	35	14.4	110	60		213	14	F	140	34	17	118	74
140	14	F	167	70	25.1	110	70		177	14	F	149	40	18	120	84		214	14	F	147	42	19	130	80
141	14	F	155	40	16.6	110	60		178	14	F	150	45	20	100	70		215	14	F	142	42	22	100	70
142	14	F	161	45	17.4	100	70		179	14	F	151	57	25	110	80		216	14	F	152	42	18	110	70
143	14	F	149	35	15.8	100	70		180	14	F	152	35	15.1	110	80		217	14	F	150	42	19	110	80
144	14	F	146	36	16.9	100	70		181	14	F	152	41	17.7	110	74		218	14	F	144	35	17	100	70
145	14	F	158	52	20.8	120	70		182	14	F	154	46	19.4	110	80		219	14	F	149	45	20	104	70
146	14	F	150	46	20.4	90	60		183	14	F	144	40	19.3	120	80		220	14	F	150	50	22	110	70
147	14	F	150	40	17.8	110	70		184	14	F	165	45	16.5	118	70		221	14	F	137	30	16	114	80
148	14	F	154	45	19	100	80		185	14	F	143	40	19.6	130	96		222	14	F	152	45	20	118	70

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
223	14	F	153	43	18.4	110	80	260	15	F	140	45	23	120	76	297	15	F	150	40	18	112	50
224	14	F	149	50	22.5	120	80	261	15	F	145	34	16.2	100	70	298	15	F	152	42	18	100	70
225	14	F	157	50	20.3	118	80	262	15	F	158	39	15.6	120	80	299	15	F	151	41	18	114	60
226	14	F	154	50	21.1	112	74	263	15	F	155	44	18.3	110	70	300	15	F	149	40	18	120	74
227	14	F	157	42	17	118	80	264	15	F	146	40	18.8	120	80	301	15	F	154	45	19	100	60
228	14	F	150	40	17.8	104	60	265	15	F	154	40	16.9	100	70	302	15	F	153	50	21	110	70
229	14	F	152	40	17.3	120	74	266	15	F	153	45	19.2	110	68	303	15	F	144	40	19	110	70
230	14	F	147	47	21.8	118	80	267	15	F	161	50	19.3	110	80	304	15	F	150	40	18	110	70
231	14	F	149	48	21.6	100	70	268	15	F	157	40	16.2	100	70	305	15	F	157	40	16	110	60
232	14	F	144	35	16.9	90	70	269	15	F	153	45	19.2	116	80	306	15	F	145	35	17	100	70
233	14	F	147	42	19.4	96	70	270	15	F	145	32	15.2	100	60	307	15	F	165	50	18	120	70
234	14	F	142	35	17.4	100	76	271	15	F	160	42	16.4	110	70	308	15	F	163	45	17	110	70
235	14	F	150	47	20.9	100	80	272	15	F	165	46	16.9	126	76	309	15	F	157	37	15	114	80
236	14	F	150	40	17.8	110	76	273	15	F	147	38	17.6	118	74	310	15	F	145	40	19	110	72
237	14	F	144	44	21.2	110	80	274	15	F	155	44	18.3	100	70	311	15	F	147	40	19	124	78
238	14	F	150	47	20.9	120	84	275	15	F	154	46	19.4	100	74	312	15	F	160	63	25	136	86
239	14	F	148	35	16	90	70	276	15	F	145	38	18.1	100	60	313	15	F	157	40	16	100	70
240	14	F	143	33	16.1	110	70	277	15	F	154	35	14.8	116	80	314	15	F	157	40	16	120	80
241	15	F	150	36	16	90	68	278	15	F	155	34	14.2	120	80	315	15	F	154	40	17	120	80
242	15	F	135	35	19.2	106	78	279	15	F	147	45	20.8	110	80	316	15	F	140	33	17	94	60
243	15	F	146	36	16.9	110	70	280	15	F	144	42	20.3	130	80	317	15	F	153	45	19	120	80
244	15	F	150	38	16.9	120	70	281	15	F	164	49	18.2	110	70	318	15	F	153	40	17	90	60
245	15	F	150	35	15.6	120	80	282	15	F	157	35	14.2	108	70	319	15	F	141	45	23	107	70
246	15	F	145	40	19	120	70	283	15	F	144	40	19.3	112	70	320	15	F	149	35	16	120	70
247	15	F	146	40	18.8	128	94	284	15	F	154	42	17.7	110	70	321	15	F	140	41	21	120	70
248	15	F	151	43	18.9	94	60	285	15	F	149	37	16.7	112	70	322	15	F	142	35	17	120	70
249	15	F	145	40	19	104	70	286	15	F	154	40	16.9	100	70	323	15	F	141	30	15	100	70
250	15	F	158	45	18	110	70	287	15	F	147	38	17.6	120	70	324	15	F	148	37	17	120	80
251	15	F	147	35	16.2	118	70	288	15	F	147	42	19.4	120	70	325	15	F	153	40	17	110	70
252	15	F	167	50	17.9	120	70	289	15	F	140	35	17.9	100	70	326	15	F	150	33	15	110	68
253	15	F	150	42	18.7	110	70	290	15	F	156	45	18.5	120	70	327	15	F	155	46	19	120	70
254	15	F	154	40	16.9	100	60	291	15	F	145	30	14.3	112	70	328	15	F	148	50	23	120	70
255	15	F	154	44	18.6	100	60	292	15	F	156	75	22.6	120	70	329	15	F	155	50	21	120	70
256	15	F	149	42	18.9	120	70	293	15	F	150	65	27.9	110	70	330	15	F	155	40	17	120	70
257	15	F	163	55	20.7	120	80	294	15	F	149	40	18	100	70	331	15	F	157	40	16	120	70
258	15	F	151	60	26.3	110	76	295	15	F	149	40	18	100	70	332	15	F	150	30	13	110	60
259	15	F	150	41	18.2	96	70	296	15	F	156	54	22.2	100	70	333	15	F	144	35	17	120	76

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
334	15	F	155	45	18.7	120	80	371	16	F	149	36	16.2	122	70	408	16	F	151	41	18	100	60
335	15	F	143	30	14.7	110	70	372	16	F	149	36	16.2	90	64	409	16	F	145	41	20	118	80
336	15	F	163	45	16.9	120	74	373	16	F	156	41	16.8	110	72	410	16	F	157	46	19	96	70
337	15	F	145	35	16.6	124	80	374	16	F	159	50	19.8	110	60	411	16	F	157	46	18	120	70
338	15	F	156	46	18.9	120	80	375	16	F	158	41	16.4	110	80	412	16	F	156	45	19	100	80
339	15	F	141	35	17.6	118	70	376	16	F	145	36	17.1	114	76	413	16	F	140	50	26	110	80
340	15	F	151	35	15.4	110	80	377	16	F	148	41	18.7	100	70	414	16	F	150	39	17	120	80
341	15	F	151	32	14	120	80	378	16	F	151	45	19.7	108	70	415	16	F	148	43	20	100	70
342	15	F	150	40	17.8	112	70	379	16	F	150	50	22.2	120	80	416	16	F	162	42	16	124	90
343	15	F	150	40	17.8	120	80	380	16	F	155	45	18.7	110	80	417	16	F	150	44	20	108	76
344	15	F	149	40	18	100	60	381	16	F	153	40	17.1	94	70	418	16	F	141	35	18	90	60
345	15	F	155	45	18.7	110	80	382	16	F	151	45	19.7	134	80	419	16	F	145	43	21	114	64
346	15	F	152	45	19.5	110	80	383	16	F	146	47	22	102	60	420	16	F	150	47	21	120	80
347	15	F	161	50	19.3	120	80	384	16	F	145	40	19	114	58	421	16	F	148	39	18	110	70
348	15	F	145	38	18.1	110	80	385	16	F	155	47	19.6	120	80	422	16	F	159	46	18	100	70
349	15	F	145	38	18.1	120	70	386	16	F	150	46	20.4	120	80	423	16	F	154	65	27	130	80
350	15	F	153	35	15	90	70	387	16	F	150	41	18.2	110	80	424	16	F	152	41	18	110	72
351	15	F	159	59	23.3	110	80	388	16	F	144	40	19.3	110	70	425	16	F	154	52	22	120	70
352	15	F	142	43	21.3	110	60	389	16	F	161	48	18.5	116	70	426	16	F	149	45	20	114	70
353	15	F	144	39	18.8	100	60	390	16	F	153	60	25.6	124	90	427	16	F	140	39	20	110	80
354	15	F	155	45	18.7	110	80	391	16	F	149	40	18	120	86	428	16	F	160	49	19	110	70
355	15	F	164	55	20.4	120	76	392	16	F	165	52	19.1	106	70	429	16	F	148	45	21	122	68
356	15	F	155	45	18.7	120	80	393	16	F	150	45	20	108	60	430	16	F	149	36	16	92	70
357	15	F	146	46	21.6	110	70	394	16	F	145	40	19	120	70	431	16	F	156	42	17	120	70
358	15	F	146	35	16.4	100	70	395	16	F	160	55	21.5	114	70	432	16	F	144	41	20	120	70
359	16	F	153	45	19.2	106	74	396	16	F	154	42	17.7	120	80	433	16	F	147	46	21	120	84
360	16	F	148	40	18.3	100	74	397	16	F	166	46	16.7	118	78	434	16	F	150	36	16	90	64
361	16	F	140	35	17.9	100	80	398	16	F	163	64	24.1	110	70	435	16	F	148	45	21	120	76
362	16	F	149	47	21.2	110	70	399	16	F	145	50	23.8	110	80	436	16	F	163	55	21	140	80
363	16	F	148	34	15.5	102	76	400	16	F	153	45	19.2	110	70	437	16	F	156	37	15	114	72
364	16	F	163	46	17.3	122	80	401	16	F	157	47	19.1	112	72	438	16	F	160	45	18	120	80
365	16	F	152	45	19.5	120	74	402	16	F	160	70	27.3	130	82	439	16	F	160	53	21	120	90
366	16	F	153	45	19.2	126	90	403	16	F	146	46	21.6	120	78	440	16	F	150	41	18	120	78
367	16	F	160	40	15.6	110	66	404	16	F	162	43	16.4	112	70	441	16	F	145	45	21	120	76
368	16	F	163	40	15.1	120	80	405	16	F	150	41	18.2	90	62	442	16	F	140	30	15	120	70
369	16	F	150	44	19.6	110	80	406	16	F	149	39	17.6	104	70	443	16	F	155	44	18	110	80
370	16	F	151	46	20.2	110	80	407	16	F	151	53	23.2	104	70	444	16	F	150	45	20	100	70

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
445	16	F	150	55	24.4	120	72	482	17	F	153	40	17.1	90	60	519	17	F	155	40	17	108	60
446	16	F	157	50	20.3	112	80	483	17	F	139	35	18.1	114	70	520	17	F	151	40	18	120	80
447	16	F	160	59	23	104	68	484	17	F	160	53	20.7	120	78	521	17	F	156	45	19	102	66
448	16	F	151	42	18.4	100	70	485	17	F	147	32	14.8	120	74	522	17	F	150	40	18	114	70
449	16	F	159	44	17.4	110	70	486	17	F	154	43	18.1	130	80	523	17	F	161	60	23	130	80
450	16	F	152	45	19.5	90	60	487	17	F	155	42	17.4	128	78	524	17	F	167	55	20	130	80
451	16	F	147	41	19	110	70	488	17	F	150	50	22.2	130	84	525	17	F	156	43	18	100	70
452	16	F	153	40	17.1	122	86	489	17	F	160	53	20.7	130	90	526	17	F	160	50	20	110	70
453	16	F	150	38	16.9	130	70	490	17	F	156	50	20.5	100	70	527	17	F	152	44	19	120	80
454	16	F	145	50	23.8	100	70	491	17	F	159	47	18.6	116	70	528	17	F	152	48	21	108	78
455	16	F	158	40	16	110	80	492	17	F	145	45	21.4	110	52	529	17	F	142	40	20	120	78
456	16	F	144	33	15.9	100	70	493	17	F	155	44	18.3	118	80	530	17	F	152	55	24	132	98
457	16	F	169	56	19.6	114	78	494	17	F	149	35	15.8	110	82	531	17	F	157	45	18	100	64
458	16	F	155	50	20.8	112	80	495	17	F	148	40	18.2	128	78	532	17	F	167	55	20	120	80
459	16	F	145	32	15.2	108	72	496	17	F	160	46	18	104	68	533	17	F	155	45	19	100	70
460	16	F	150	36	16	116	70	497	17	F	161	56	21.6	100	70	534	17	F	146	45	21	124	80
461	16	F	142	35	17.4	110	70	498	17	F	160	50	19.5	122	82	535	17	F	157	46	19	120	70
462	16	F	150	39	17.3	100	80	499	17	F	153	45	19.2	106	70	536	17	F	147	44	20	120	80
463	16	F	148	40	18.3	120	70	500	17	F	145	40	19	106	70	537	17	F	157	38	15	90	66
464	16	F	151	37	16.2	90	70	501	17	F	155	42	17.5	114	74	538	17	F	154	55	23	120	80
465	16	F	159	45	17.8	100	70	502	17	F	155	42	17.5	114	70	539	17	F	146	35	16	120	70
466	16	F	147	37	17.1	104	70	503	17	F	151	40	17.5	110	76	540	17	F	159	55	22	126	72
467	17	F	160	42	16.4	110	76	504	17	F	150	40	17.8	98	76	541	17	F	157	37	15	100	70
468	17	F	159	40	15.8	120	82	505	17	F	159	40	15.8	100	70	542	17	F	150	40	18	110	70
469	17	F	156	42	16.6	130	78	506	17	F	142	38	18.8	110	80	543	17	F	159	50	20	110	72
470	17	F	159	43	17	128	80	507	17	F	152	50	21.6	110	70	544	17	F	162	52	20	110	70
471	17	F	155	45	18.7	110	78	508	17	F	159	50	19.8	110	80	545	17	F	153	63	27	120	70
472	17	F	149	40	18	124	72	509	17	F	152	65	28.1	118	78	546	13	M	141	34	17	108	72
473	17	F	164	50	18.5	120	80	510	17	F	152	40	17.3	128	76	547	13	M	135	22	12	100	70
474	17	F	160	35	13.7	116	76	511	17	F	149	35	15.8	100	64	548	13	M	136	27	15	102	68
475	17	F	155	40	16.6	108	78	512	17	F	149	52	23.4	112	78	549	13	M	147	37	17	100	70
476	17	F	157	50	20.3	120	76	513	17	F	148	40	18.3	100	70	550	13	M	158	47	19	106	60
477	17	F	145	35	16.6	126	80	514	17	F	158	45	18	120	80	551	13	M	170	50	17	120	70
478	17	F	155	42	17.5	112	70	515	17	F	145	40	19	130	82	552	13	M	139	35	18	100	70
479	17	F	154	54	22.8	104	70	516	17	F	153	40	17.1	96	66	553	13	M	163	40	15	106	68
480	17	F	160	55	21.4	122	80	517	17	F	153	50	21.4	98	70	554	13	M	141	31	16	110	64
481	17	F	146	45	21.1	112	60	518	17	F	144	41	19.8	118	80	555	13	M	154	34	14	100	72

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
556	13	M	142	35	17.4	102	60		593	13	M	136	29	15.7	104	70		630	13	M	136	26	14	90	64
557	13	M	135	27	14.8	87	60		594	13	M	142	30	14.9	110	70		631	13	M	134	28	16	106	82
558	13	M	150	37	16.4	110	78		595	13	M	147	39	18	90	60		632	13	M	147	35	16	110	72
559	13	M	141	30	15.1	110	50		596	13	M	147	40	18.5	120	60		633	13	M	145	30	14	110	92
560	13	M	141	26	13.1	94	64		597	13	M	140	31	15.8	98	70		634	13	M	140	30	15	110	60
561	13	M	145	33	15.7	100	70		598	13	M	140	28	14.3	104	78		635	13	M	162	45	16	112	92
562	13	M	141	26	13.1	94	56		599	13	M	154	34	14.3	100	70		636	13	M	133	25	14	110	78
563	13	M	146	54	25.3	100	60		600	13	M	136	30	16.2	100	70		637	13	M	142	30	15	108	68
564	13	M	149	35	15.8	94	70		601	13	M	140	29	14.8	80	60		638	13	M	137	27	14	90	60
565	13	M	141	31	15.6	100	72		602	13	M	146	35	16.4	90	70		639	13	M	141	30	15	92	58
566	13	M	136	27	14.6	92	60		603	13	M	147	35	16.2	90	70		640	13	M	139	36	19	104	70
567	13	M	150	33	14.7	100	64		604	13	M	146	30	14.1	90	70		641	13	M	132	25	14	94	60
568	13	M	142	30	14.9	98	60		605	13	M	146	54	25.3	120	80		642	13	M	145	35	17	110	70
569	13	M	136	28	15.1	96	72		606	13	M	139	30	15.5	100	60		643	13	M	140	30	15	102	70
570	13	M	142	30	14.9	104	70		607	13	M	143	30	14.7	80	62		644	13	M	141	25	13	106	74
571	13	M	132	26	14.9	84	60		608	13	M	136	26	14.1	90	70		645	13	M	126	25	16	98	70
572	13	M	147	38	17.6	106	78		609	13	M	145	29	13.8	110	60		646	13	M	104	35	23	98	70
573	13	M	145	34	16.2	96	68		610	13	M	139	34	17.6	100	60		647	13	M	132	23	13	100	70
574	13	M	147	35	16.2	104	70		611	13	M	145	37	17.6	100	60		648	13	M	140	35	18	100	70
575	13	M	155	35	14.6	100	70		612	`	M	140	30	15.3	100	70		649	13	M	132	35	20	108	70
576	13	M	165	40	14.7	84	60		613	13	M	145	41	19.5	104	60		650	13	M	130	25	15	90	60
577	13	M	145	30	14.3	100	64		614	13	M	160	34	13.3	102	70		651	13	M	143	32	16	98	74
578	13	M	131	26	15.2	100	68		615	13	M	149	30	13.5	98	70		652	13	M	130	25	15	100	72
579	13	M	143	33	16.1	78	58		616	13	M	146	30	14.1	104	70		653	13	M	139	30	16	106	82
580	13	M	141	31	15.6	100	70		617	13	M	137	29	15.5	114	70		654	13	M	145	36	17	98	62
581	13	M	135	25	13.7	96	68		618	13	M	149	34	15.3	90	64		655	13	M	131	24	14	90	60
582	13	M	154	31	13.1	104	70		619	13	M	140	28	14.3	100	60		656	13	M	140	30	15	102	70
583	13	M	145	34	16.2	90	70		620	13	M	145	35	16.6	110	70		657	13	M	155	41	17	142	72
584	13	M	146	34	16	100	70		621	13	M	135	26	14.3	108	70		658	14	M	149	37	17	80	70
585	13	M	134	23	13.4	90	50		622	13	M	143	31	15.2	90	62		659	14	M	156	42	17	90	62
586	13	M	150	31	13.8	94	60		623	13	M	152	35	15.1	94	72		660	14	M	159	43	17	102	70
587	13	M	135	27	14.8	88	62		624	13	M	134	27	15	92	68		661	14	M	154	36	15	94	60
588	13	M	144	33	15.9	96	60		625	13	M	137	28	14.9	92	60		662	14	M	145	37	18	90	69
589	13	M	139	26	13.5	100	70		626	13	M	140	40	20.4	110	62		663	14	M	164	45	17	90	60
590	13	M	150	35	15.6	88	62		627	13	M	149	33	14.9	102	54		664	14	M	149	32	14	100	60
591	13	M	141	30	15.1	80	60		628	13	M	138	30	15.8	94	64		665	14	M	144	30	15	108	78
592	13	M	136	30	16.2	80	60		629	13	M	156	43	17.7	110	90		666	14	M	150	35	16	122	78

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
667	14	M	150	43	19.1	118	78	704	14	M	152	41	17.7	110	70	741	14	M	156	42	17	102	70
668	14	M	169	46	16.1	110	68	705	14	M	139	29	15	82	60	742	14	M	150	35	16	98	60
669	14	M	155	44	18.3	90	64	706	14	M	150	39	17.3	100	70	743	14	M	145	30	14	100	70
670	14	M	164	51	19	100	70	707	14	M	150	35	15.6	104	74	744	14	M	145	33	16	98	70
671	14	M	155	35	14.6	110	70	708	14	M	148	40	18.3	90	70	745	14	M	155	34	14	94	60
672	14	M	144	30	14.5	108	70	709	14	M	153	36	15.4	110	80	746	14	M	153	42	18	100	70
673	14	M	164	50	18.6	106	72	710	14	M	150	30	13.3	94	60	747	14	M	138	32	17	88	56
674	14	M	169	60	21	120	80	711	14	M	155	40	16.6	102	68	748	14	M	151	45	20	110	68
675	14	M	157	44	17.9	94	60	712	14	M	142	37	18.3	110	60	749	14	M	154	42	18	110	70
676	14	M	147	34	15.7	100	60	713	14	M	148	40	18.3	100	70	750	14	M	158	40	18	110	62
677	14	M	157	59	23.9	98	60	714	14	M	143	32	15.6	98	70	751	14	M	151	40	18	102	70
678	14	M	140	30	15.3	90	58	715	14	M	133	28	15.8	90	74	752	14	M	160	50	20	118	90
679	14	M	141	30	15.1	90	72	716	14	M	156	43	17.7	110	70	753	14	M	149	32	14	100	72
680	14	M	149	37	16.7	110	60	717	14	M	154	39	16.4	120	84	754	14	M	157	36	15	130	90
681	14	M	140	30	15.3	100	62	718	14	M	158	42	16.8	110	84	755	14	M	148	32	15	110	70
682	14	M	149	32	14.4	90	52	719	14	M	148	35	16	110	60	756	14	M	143	33	16	102	70
683	14	M	135	29	15.9	100	58	720	14	M	158	44	17.6	106	70	757	14	M	155	45	19	114	78
684	14	M	150	33	14.7	94	58	721	14	M	158	44	17.6	110	74	758	14	M	145	34	16	120	82
685	14	M	159	36	14.2	102	60	722	14	M	150	40	17.8	130	90	759	14	M	149	35	16	100	60
686	14	M	151	30	13.2	110	70	723	14	M	155	40	16.6	110	70	760	14	M	151	30	13	104	70
687	14	M	140	33	16.8	94	70	724	14	M	146	30	14.1	110	60	761	14	M	158	35	14	102	66
688	14	M	150	34	15.1	92	62	725	14	M	150	35	15.6	120	80	762	14	M	153	35	15	104	70
689	14	M	164	45	16.7	110	80	726	14	M	135	26	14.3	90	60	763	14	M	152	42	18	110	80
690	14	M	150	56	24.9	110	60	727	14	M	145	35	16.6	110	70	764	14	M	157	34	14	120	78
691	14	M	165	45	16.5	110	80	728	14	M	141	31	15.6	110	70	765	14	M	159	38	15	110	78
692	14	M	146	34	16	90	70	729	14	M	134	46	25.6	106	68	766	14	M	151	38	17	110	60
693	14	M	149	36	16.2	100	70	730	14	M	146	35	16.4	92	60	767	14	M	157	42	17	124	78
694	14	M	155	37	15.4	110	70	731	14	M	162	44	16.8	106	72	768	14	M	145	37	18	110	70
695	14	M	154	40	16.9	94	60	732	14	M	145	30	14.3	90	54	769	14	M	148	34	16	100	60
696	14	M	160	52	20.3	130	80	733	14	M	155	39	16.2	112	74	770	14	M	160	45	17	110	68
697	14	M	165	37	13.6	110	60	734	14	M	146	35	16.4	92	60	771	14	M	148	40	18	102	70
698	14	M	135	25	13.7	92	60	735	14	M	140	31	15.8	110	70	772	14	M	151	35	15	100	70
699	14	M	158	40	16	100	70	736	14	M	145	33	15.7	100	70	773	14	M	148	35	16	118	80
700	14	M	144	31	14.9	110	60	737	14	M	159	34	13.4	98	70	774	14	M	159	40	16	108	70
701	14	M	149	40	18	110	70	738	14	M	145	30	14.3	100	70	775	14	M	150	39	17	100	70
702	14	M	144	35	16.9	100	70	739	14	M	157	49	19.9	100	70	776	14	M	154	44	19	120	80
703	14	M	154	41	17.3	100	70	740	14	M	140	31	15.8	104	70	777	14	M	158	45	18	110	70

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
778	14	M	150	35	15.6	100	70	815	15	M	160	60	23.4	118	70	852	15	M	154	38	16	110	70
779	14	M	137	30	16	90	68	816	15	M	145	34	16.2	106	70	853	15	M	155	47	20	116	70
780	14	M	155	40	16.6	120	80	817	15	M	156	56	23	128	70	854	15	M	155	55	23	108	70
781	14	M	153	35	15	90	60	818	15	M	148	35	16	100	60	855	15	M	158	37	15	100	70
782	14	M	40	35	17.9	110	78	819	15	M	174	50	16.5	122	60	856	15	M	148	32	15	108	70
783	14	M	149	40	18	98	66	820	15	M	146	35	16.4	114	72	857	15	M	160	40	16	100	70
784	14	M	143	33	16.1	94	60	821	15	M	151	34	14.9	102	70	858	15	M	157	40	16	114	70
785	14	M	145	34	16.2	100	78	822	15	M	162	45	17.1	107	74	859	15	M	159	42	17	90	70
786	14	M	148	41	18.7	106	70	823	15	M	155	39	16.2	90	48	860	15	M	155	39	16	100	60
787	14	M	145	32	15.2	90	70	824	15	M	179	50	15.6	114	70	861	15	M	163	47	18	130	94
788	14	M	158	44	17.6	110	70	825	15	M	167	46	16.5	110	70	862	15	M	156	45	19	126	84
789	14	M	163	45	16.9	120	80	826	15	M	158	50	20	120	80	863	15	M	157	40	16	100	64
790	14	M	160	65	25.4	116	76	827	15	M	148	34	15.5	108	70	864	15	M	164	40	15	90	60
791	14	M	150	33	14.7	110	70	828	15	M	162	35	13.3	110	70	865	15	M	164	43	16	120	70
792	14	M	139	27	14	94	70	829	15	M	166	40	14.5	110	80	866	15	M	167	45	16	106	70
793	14	M	166	51	18.5	110	70	830	15	M	160	40	15.6	90	60	867	15	M	170	46	16	110	70
794	14	M	145	38	18.1	94	60	831	15	M	151	45	19.7	98	68	868	15	M	160	45	18	124	80
795	14	M	160	49	19.1	100	70	832	15	M	154	40	16.9	90	60	869	15	M	163	51	19	114	80
796	14	M	160	40	15.6	102	60	833	15	M	173	55	18.4	122	80	870	15	M	155	36	15	102	80
797	14	M	160	35	13.7	102	70	834	15	M	154	33	13.9	100	70	871	15	M	165	50	18	118	80
798	14	M	147	35	16.2	100	60	835	15	M	165	40	14.7	94	70	872	15	M	153	41	18	90	60
799	14	M	155	40	16.6	90	60	836	15	M	167	52	18.6	100	62	873	15	M	172	50	17	108	70
800	14	M	150	31	13.8	100	72	837	15	M	165	65	23.9	118	68	874	15	M	155	40	17	110	70
801	14	M	150	35	15.6	100	74	838	15	M	138	30	15.8	94	70	875	15	M	163	43	16	100	70
802	14	M	140	29	14.8	100	50	839	15	M	143	34	16.6	102	62	876	15	M	153	39	17	130	72
803	14	M	149	37	16.7	120	78	840	15	M	154	37	15.6	104	70	877	15	M	157	40	16	110	70
804	14	M	166	50	18.1	110	70	841	15	M	164	69	25.7	140	80	878	15	M	161	46	17	110	64
805	15	M	153	40	17.1	90	62	842	15	M	160	39	15.2	90	70	879	15	M	173	54	18	110	70
806	15	M	156	59	24.2	120	82	843	15	M	165	47	17.3	100	60	880	15	M	150	40	18	120	80
807	15	M	161	43	16.1	110	74	844	15	M	152	36	15.6	90	60	881	15	M	175	65	21	130	80
808	15	M	149	35	15.8	112	64	845	15	M	145	29	13.8	90	70	882	15	M	148	35	16	110	80
809	15	M	141	33	16.6	80	50	846	15	M	155	49	20.4	124	70	883	15	M	164	45	17	124	72
810	15	M	154	42	17.7	110	74	847	15	M	150	38	16.9	118	80	884	15	M	157	40	16	110	70
811	15	M	167	48	17.2	126	70	848	15	M	154	37	15.6	110	70	885	15	M	147	32	15	104	72
812	15	M	165	45	16.5	84	64	849	15	M	170	67	23.2	114	80	886	15	M	153	40	17	100	60
813	15	M	162	63	24	128	90	850	15	M	165	55	20.2	114	70	887	15	M	159	52	21	130	52
814	15	M	160	45	17.6	132	78	851	15	M	160	38	14.8	110	70	888	15	M	163	46	17	116	80

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
889	15	M	163	45	16.9	104	84		926	15	M	150	35	15.6	116	70		963	15	M	138	32	17	110	70
890	15	M	157	35	14.2	110	84		927	15	M	162	37	14.1	96	60		964	15	M	171	75	26	146	94
891	15	M	164	41	15.2	110	74		928	15	M	164	52	19.3	128	62		965	15	M	146	30	14	100	70
892	15	M	145	30	14.3	92	68		929	15	M	152	34	14.7	84	60		966	15	M	174	46	16	110	60
893	15	M	175	51	16.7	134	68		930	15	M	154	43	18.1	114	60		967	15	M	155	41	17	104	72
894	15	M	167	45	16.1	124	70		931	15	M	162	44	16.8	100	80		968	15	M	149	35	16	90	60
895	15	M	148	40	18.3	108	62		932	15	M	143	30	14.7	90	60		969	15	M	154	36	15	106	68
896	15	M	174	55	18.2	112	62		933	15	M	162	70	26.2	104	70		970	15	M	130	27	16	104	68
897	15	M	155	30	12.5	106	70		934	15	M	162	43	16.4	116	70		971	15	M	166	48	17	120	80
898	15	M	163	47	17.7	126	72		935	15	M	154	45	19	110	70		972	15	M	161	45	19	118	78
899	15	M	164	42	15.6	100	60		936	15	M	154	41	17.3	104	70		973	15	M	153	41	18	110	68
900	15	M	160	43	16.8	108	78		937	15	M	150	45	20	122	70		974	16	M	168	56	20	110	64
901	15	M	155	41	17.1	110	78		938	15	M	174	49	16.2	122	80		975	16	M	182	70	21	126	82
902	15	M	160	53	20.7	130	90		939	15	M	167	56	20.1	120	80		976	16	M	169	47	17	110	74
903	15	M	157	45	18.3	120	88		940	15	M	162	41	15.6	120	80		977	16	M	185	91	18	144	84
904	15	M	152	31	13.4	110	80		941	15	M	151	30	13.2	116	80		978	16	M	166	52	19	110	68
905	15	M	169	45	15.8	90	70		942	15	M	151	46	20.2	110	70		979	16	M	164	44	16	110	80
906	15	M	149	38	17.1	110	70		943	15	M	143	30	14.7	100	70		980	16	M	165	55	20	126	76
907	15	M	162	46	17.5	110	70		944	15	M	147	43	19.9	118	80		981	16	M	159	40	16	120	80
908	15	M	149	40	18	94	70		945	15	M	159	45	17.8	112	70		982	16	M	160	44	17	140	70
909	15	M	154	45	19	110	70		946	15	M	164	50	18.6	100	70		983	16	M	165	50	18	114	70
910	15	M	150	40	17.8	120	80		947	15	M	138	30	15.8	100	70		984	16	M	170	57	20	98	70
911	15	M	154	35	14.8	112	84		948	15	M	155	36	15	90	60		985	16	M	148	35	16	132	62
912	15	M	135	25	13.7	106	72		949	15	M	163	44	15.1	100	70		986	16	M	164	43	16	110	62
913	15	M	153	35	15	108	72		950	15	M	151	40	17.5	112	70		987	16	M	164	49	18	134	78
914	15	M	163	45	16.9	120	80		951	15	M	158	38	15.2	102	78		988	16	M	169	51	18	100	70
915	15	M	170	59	20.4	108	72		952	15	M	170	45	15.6	122	60		989	16	M	160	45	18	94	60
916	15	M	149	34	15.3	108	78		953	15	M	150	32	14.2	100	60		990	16	M	171	55	19	112	60
917	15	M	155	40	16.6	108	62		954	15	M	151	36	15.8	110	70		991	16	M	159	42	17	102	60
918	15	M	144	32	15.4	94	62		955	15	M	157	35	14.2	110	70		992	16	M	162	53	20	110	58
919	15	M	160	46	18	110	82		956	15	M	153	35	15	130	80		993	16	M	158	38	15	94	74
920	15	M	162	40	15.2	110	80		957	15	M	164	50	18.6	110	70		994	16	M	155	40	17	122	80
921	15	M	155	35	18	110	70		958	15	M	169	50	17.5	110	70		995	16	M	165	42	15	120	98
922	15	M	165	42	15.4	100	74		959	15	M	159	35	13.8	110	70		996	16	M	167	56	20	110	70
923	15	M	145	39	18.5	90	60		960	15	M	152	38	16.4	124	74		997	16	M	166	44	16	122	60
924	15	M	158	45	18	124	74		961	15	M	152	35	15.1	110	80		998	16	M	170	55	19	114	70
925	15	M	150	34	15.1	120	74		962	15	M	154	42	17.7	106	70		999	16	M	173	56	19	130	70

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
1000	16	M	157	46	18.7	100	70	1037	16	M	163	55	20.7	104	70	1074	16	M	157	41	17	110	72
1001	16	M	155	40	16.6	122	84	1038	16	M	165	60	22	114	70	1075	16	M	173	47	16	110	70
1002	16	M	155	40	16	90	66	1039	16	M	162	50	19.1	120	90	1076	16	M	166	47	17	120	84
1003	16	M	171	50	15	130	70	1040	16	M	160	41	16	110	78	1077	16	M	170	51	18	120	76
1004	16	M	157	44	17.9	110	74	1041	16	M	170	37	12.8	110	68	1078	16	M	161	44	17	120	70
1005	16	M	160	44	17.2	110	70	1042	16	M	176	55	17.8	110	60	1079	16	M	160	45	18	130	70
1006	16	M	160	45	17.6	98	74	1043	16	M	160	57	22.3	124	80	1080	16	M	157	56	23	126	74
1007	16	M	158	40	16	130	90	1044	16	M	155	40	16.6	120	80	1081	16	M	160	41	16	110	80
1008	16	M	170	45	15.6	126	80	1045	16	M	150	40	17.8	120	68	1082	16	M	182	65	20	116	76
1009	16	M	171	55	18.8	126	90	1046	16	M	171	46	15.7	120	80	1083	16	M	172	53	18	112	60
1010	16	M	156	45	18.5	120	80	1047	16	M	174	60	19.8	110	70	1084	16	M	162	47	18	120	80
1011	16	M	159	36	14.2	100	70	1048	16	M	172	55	18.6	106	70	1085	16	M	155	40	17	106	88
1012	16	M	149	40	18	120	70	1049	16	M	151	45	19.7	108	70	1086	16	M	160	45	18	128	80
1013	16	M	167	45	16.1	100	62	1050	16	M	161	50	19.3	120	80	1087	16	M	169	54	19	136	92
1014	16	M	167	34	12.2	112	70	1051	16	M	161	46	17.7	120	88	1088	16	M	164	52	19	110	70
1015	16	M	159	50	19.8	126	76	1052	16	M	173	55	18.4	106	70	1089	16	M	161	43	17	104	70
1016	16	M	163	50	18.8	122	68	1053	16	M	169	52	18.2	114	70	1090	16	M	171	55	19	122	80
1017	16	M	164	51	19	108	70	1054	16	M	164	51	19	130	72	1091	16	M	150	50	22	100	62
1018	16	M	165	46	16.9	110	72	1055	16	M	160	41	16	124	76	1092	16	M	161	40	15	110	68
1019	16	M	158	55	22	132	86	1056	16	M	157	45	18.3	120	84	1093	16	M	181	74	23	120	90
1020	16	M	154	44	18.6	120	84	1057	16	M	171	52	17.8	124	80	1094	16	M	165	50	18	118	82
1021	16	M	177	67	21.4	110	80	1058	16	M	169	48	16.8	120	80	1095	16	M	176	55	18	110	60
1022	16	M	165	42	15.4	98	72	1059	16	M	173	51	17	120	80	1096	17	M	174	68	23	120	80
1023	16	M	164	44	16.4	110	68	1060	16	M	161	40	15.4	110	70	1097	17	M	170	40	14	110	60
1024	16	M	168	52	18.4	114	72	1061	16	M	163	44	16.6	112	74	1098	17	M	167	45	16	100	80
1025	16	M	160	45	17.6	120	82	1062	16	M	166	43	15.6	118	80	1099	17	M	157	43	17	114	70
1026	16	M	158	45	18	112	78	1063	16	M	165	55	20.2	112	70	1100	17	M	174	50	17	120	70
1027	16	M	165	65	23.9	120	78	1064	16	M	159	46	18.2	104	70	1101	17	M	182	72	22	114	70
1028	16	M	171	50	17.1	130	96	1065	16	M	178	66	20.8	112	60	1102	17	M	189	71	20	128	96
1029	16	M	169	50	17.5	120	80	1066	16	M	167	57	20.4	104	70	1103	17	M	160	45	18	98	68
1030	16	M	165	49	18	128	92	1067	16	M	163	51	19.2	132	70	1104	17	M	164	47	18	100	70
1031	16	M	169	44	16.2	110	68	1068	16	M	169	57	20	112	70	1105	17	M	165	43	16	100	70
1032	16	M	158	45	18	100	60	1069	16	M	172	49	16.6	106	72	1106	17	M	167	55	20	136	72
1033	16	M	180	58	17.9	136	72	1070	16	M	167	49	17.6	114	72	1107	17	M	163	52	20	124	80
1034	16	M	155	45	18.7	106	70	1071	16	M	165	42	15.4	110	60	1108	17	M	160	44	17	110	70
1035	16	M	164	50	18.6	140	82	1072	16	M	175	56	18.3	128	72	1109	17	M	175	46	15	110	70
1036	16	M	165	46	16.9	116	76	1073	16	M	164	45	16.7	120	80	1110	17	M	165	45	17	110	70

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP	S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
1111	17	M	165	53	19.5	108	74	1149	17	M	169	57	20	110	76	1187	17	M	166	63	23	110	62
1112	17	M	167	45	16.1	110	80	1150	17	M	160	45	17.6	106	60	1188	17	M	159	42	17	120	74
1113	17	M	164	52	19.3	110	70	1151	17	M	170	50	17.3	100	64	1189	17	M	171	62	21	120	90
1114	17	M	172	62	21	110	70	1152	17	M	183	76	22.7	124	84	1190	17	M	164	38	14	108	70
1115	17	M	157	38	15.4	124	70	1153	17	M	156	58	23.8	128	78	1191	17	M	167	55	20	122	80
1116	17	M	165	56	20.6	114	70	1154	17	M	169	56	19.6	118	70	1192	17	M	175	52	17	118	82
1117	17	M	172	60	20.3	128	60	1155	17	M	165	45	16.5	102	72	1193	17	M	162	40	15	110	70
1118	17	M	172	55	18.6	114	70	1156	17	M	165	45	16.5	104	70	1194	17	M	160	45	18	120	82
1119	17	M	166	50	18.1	110	78	1157	17	M	160	58	22.7	104	66	1195	17	M	169	45	16	124	82
1120	17	M	175	55	18	110	60	1158	17	M	170	45	15.6	118	82	1196	17	M	151	40	18	130	80
1121	17	M	156	35	14.4	110	60	1159	17	M	170	45	15.6	130	80	1197	17	M	167	53	19	124	86
1122	17	M	165	44	16.2	110	80	1160	17	M	163	46	17.3	110	70	1198	17	M	170	58	20	100	72
1123	17	M	165	45	16.5	100	80	1161	17	M	159	40	15.8	104	74	1199	17	M	169	52	18	120	80
1124	17	M	156	44	18.1	106	70	1162	17	M	172	55	18.6	116	86	1200	17	M	160	50	20	114	80
1125	17	M	170	52	18	118	74	1163	17	M	170	58	20.1	110	70	1201	17	M	165	48	18	120	72
1126	17	M	170	65	22.5	140	88	1164	17	M	173	56	18.7	118	78	1202	17	M	164	52	19	120	90
1127	17	M	165	46	16.9	110	72	1165	17	M	167	40	14.3	92	60	1203	17	M	175	45	15	108	70
1128	17	M	165	40	14.7	118	96	1166	17	M	166	38	13.8	100	72	1204	17	M	158	42	17	100	70
1129	17	M	163	65	24.5	116	88	1167	17	M	164	55	20.4	120	74	1205	17	M	170	45	16	100	70
1130	17	M	174	69	22.8	130	90	1168	17	M	162	40	15.2	100	68	1206	17	M	164	44	16	94	60
1131	17	M	160	44	17.2	110	80	1169	17	M	160	45	17.6	100	72	1207	17	M	164	40	15	100	70
1132	17	M	178	47	14.8	96	72	1170	17	M	165	42	15.4	110	70	1208	17	M	160	58	23	124	88
1133	17	M	164	41	15.2	110	78	1171	17	M	167	50	17.9	120	80	1209	17	M	160	38	15	100	70
1134	17	M	170	50	17.3	110	80	1172	17	M	166	60	21.8	110	76	1210	17	M	165	48	18	108	70
1135	17	M	166	62	22.5	110	70	1173	17	M	170	45	15.6	108	70	1211	17	M	168	45	16	108	70
1136	17	M	147	35	16.2	128	82	1174	17	M	165	40	14.7	98	70	1212	17	M	170	62	22	122	80
1137	17	M	176	57	18.4	122	86	1175	17	M	170	63	21.8	132	90	1213	17	M	181	75	23	134	90
1138	17	M	164	41	15.2	110	70	1176	17	M	154	45	19	96	60	1214	17	M	166	49	18	130	80
1139	17	M	167	45	16.1	110	80	1177	17	M	172	56	18.9	108	70	1215	17	M	171	45	15	98	70
1140	17	M	174	50	16.5	140	78	1178	17	M	175	47	15.3	100	70	1216	17	M	170	45	16	110	70
1141	17	M	169	48	16.8	120	72	1179	17	M	169	45	15.8	108	72								
1142	17	M	169	45	15.8	104	70	1180	17	M	166	45	16.3	130	90								
1143	17	M	175	50	16.3	100	70	1181	17	M	163	58	21.8	130	90								
1144	17	M	156	40	16.4	82	64	1182	17	M	170	58	20.1	120	70								
1145	17	M	167	55	19.7	130	80	1183	17	M	165	42	15.4	98	60								
1146	17	M	170	55	19	124	82	1184	17	M	169	54	18.9	120	80								
1147	17	M	169	53	18.6	112	76	1185	17	M	158	53	21.2	110	70								
1148	17	M	169	44	15.4	110	76	1186	17	M	175	60	19.6	110	70								

STATISTICS OF URBAN SCHOOL - MADURAI

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
1	13	F	154	36	15.2	110	70		38	13	F	150	51	22.9	100	80		75	14	F	143	37	18	120	70
2	13	F	152	42	18.2	126	84		39	13	F	150	54	24	140	90		76	14	F	156	49	20	100	70
3	13	F	154	52	21.9	120	84		40	13	F	140	32	16.3	100	70		77	14	F	158	50	20	116	70
4	13	F	150	40	17.8	118	70		41	13	F	148	45	20.5	90	60		78	14	F	150	45	20	108	70
5	13	F	156	40	16.4	110	70		42	13	F	150	37	16.4	100	70		79	14	F	150	37	16	100	70
6	13	F	164	60	22.3	120	76		43	13	F	151	43	18.9	110	70		80	14	F	153	40	17	110	70
7	13	F	154	40	16.9	118	70		44	13	F	152	44	19	120	70		81	14	F	149	35	16	100	70
8	13	F	139	35	18.1	110	70		45	13	F	154	51	21.5	110	70		82	14	F	154	47	20	100	70
9	13	F	148	45	20.5	100	70		46	13	F	150	46	20.4	110	70		83	14	F	158	43	17	100	70
10	13	F	158	57	20.4	90	60		47	13	F	153	41	17.5	110	70		84	14	F	154	65	27	120	80
11	13	F	152	46	19.9	120	80		48	13	F	154	44	18.6	110	70		85	14	F	148	42	19	100	70
12	13	F	150	34	15.1	114	60		49	13	F	140	32	16.3	100	70		86	14	F	153	55	24	110	70
13	13	F	154	52	21.9	120	80		50	13	F	146	31	14.5	100	70		87	14	F	159	47	19	106	70
14	13	F	150	51	22.7	120	76		51	14	F	155	40	16.6	114	70		88	14	F	144	54	26	110	70
15	13	F	158	46	18.4	120	70		52	14	F	158	66	26.4	120	70		89	14	F	154	62	26	110	70
16	13	F	160	70	27.7	130	70		53	14	F	146	50	23.5	120	80		90	14	F	154	46	19	100	70
17	13	F	145	45	21.4	110	70		54	14	F	155	50	20.8	120	70		91	14	F	155	33	14	100	70
18	13	F	144	30	14.5	120	80		55	14	F	158	42	16.8	120	70		92	14	F	144	52	25	100	70
19	13	F	155	40	16.6	116	76		56	14	F	153	35	15	110	70		93	14	F	153	40	17	100	70
20	13	F	163	46	17.3	108	70		57	14	F	150	55	24.4	130	70		94	14	F	150	37	16	100	70
21	13	F	150	42	18.7	98	60		58	14	F	152	45	19.5	120	70		95	14	F	143	30	15	96	60
22	13	F	151	46	20.2	106	70		59	14	F	154	43	18.1	120	70		96	14	F	150	51	23	110	70
23	13	F	160	60	23.4	100	70		60	14	F	132	28	16.1	110	70		97	14	F	156	40	16	100	70
24	13	F	140	32	16.7	90	60		61	14	F	155	45	18.7	110	70		98	14	F	154	47	20	100	70
25	13	F	147	50	23.1	110	80		62	14	F	148	43	19.6	100	70		99	14	F	153	36	15	100	70
26	13	F	151	50	22.4	110	70		63	14	F	154	45	19	130	70		100	14	F	152	36	16	104	70
27	13	F	151	44	19.3	98	60		64	14	F	152	36	15.6	110	70		101	14	F	151	48	21	100	60
28	13	F	153	57	24.3	106	70		65	14	F	147	40	18.5	100	70		102	14	F	160	48	19	110	80
29	13	F	164	60	22.3	106	70		66	14	F	152	56	24.2	120	80		103	14	F	158	46	18	120	70
30	13	F	150	37	16.4	100	70		67	14	F	156	47	19.3	100	70		104	14	F	155	35	15	120	70
31	13	F	150	48	21.3	90	70		68	14	F	156	50	20.5	110	70		105	14	F	149	60	27	128	80
32	13	F	163	46	17.3	112	76		69	14	F	153	39	16	110	70		106	14	F	154	44	19	130	70
33	13	F	152	54	23.4	140	90		70	14	F	157	47	19.1	110	70		107	14	F	156	50	21	110	70
34	13	F	165	65	23.9	100	70		71	14	F	150	56	24.9	100	70		108	14	F	155	49	20	110	70
35	13	F	150	54	24	106	90		72	14	F	153	85	36.3	120	80		109	14	F	154	36	15	110	70
36	13	F	139	31	16	86	64		73	14	F	165	83	30.5	100	70		110	14	F	148	55	25	120	80
37	13	F	154	40	16.9	90	60		74	14	F	158	64	25.6	110	70		111	14	F	150	43	19	110	70

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
112	14	F	157	52	21.1	120	90		149	15	F	156	41	16.8	110	70		186	15	F	144	32	15	100	70
113	14	F	159	53	21	110	70		150	15	F	158	47	18.8	130	70		187	15	F	148	42	19	120	70
114	14	F	149	31	14	106	70		151	15	F	155	66	27.5	140	90		188	15	F	153	55	24	110	70
115	14	F	152	45	15.5	120	70		152	15	F	154	40	16.9	110	80		189	15	F	166	50	18	110	70
116	14	F	154	40	16.9	110	80		153	15	F	149	38	17.1	110	70		190	15	F	160	57	22	120	70
117	14	F	151	37	16.2	118	80		154	15	F	155	46	19.1	110	70		191	15	F	161	64	24	124	70
118	14	F	143	30	14.7	114	80		155	15	F	154	52	21.9	100	70		192	15	F	140	36	18	126	70
119	14	F	156	46	18.9	114	80		156	15	F	158	73	29.2	120	80		193	16	F	162	58	22	110	70
120	14	F	144	41	19.8	120	68		157	15	F	148	44	20.1	110	70		194	16	F	164	55	20	112	70
121	14	F	145	56	26.6	120	80		158	15	F	153	50	21.4	108	60		195	16	F	162	52	20	110	70
122	14	F	148	43	19.6	110	70		159	15	F	160	58	22.7	120	70		196	16	F	158	60	24	100	70
123	14	F	159	42	16.6	120	80		160	15	F	155	48	20	110	70		197	16	F	162	55	21	120	80
124	14	F	143	37	18.1	110	70		161	15	F	165	52	19.1	100	70		198	16	F	162	47	18	100	70
125	14	F	159	47	18.6	120	80		162	15	F	158	46	18.6	110	70		199	16	F	154	54	23	104	70
126	14	F	151	45	19.7	120	70		163	15	F	165	30	11	100	70		200	16	F	145	50	24	100	70
127	14	F	149	55	24.8	90	60		164	15	F	159	57	22.5	110	70		201	16	F	164	70	26	116	60
128	14	F	174	49	16.2	120	76		165	15	F	163	57	21.8	110	70		202	16	F	158	68	27	120	80
129	14	F	151	40	17.5	120	86		166	15	F	160	54	21.1	110	70		203	16	F	158	66	26	120	80
130	14	F	151	54	23.7	120	80		167	15	F	158	45	18	108	70		204	16	F	154	47	20	110	70
131	14	F	163	55	20.7	100	78		168	15	F	154	62	26	100	70		205	16	F	149	41	19	120	80
132	14	F	159	51	20.2	110	72		169	15	F	167	58	20.8	110	70		206	16	F	159	48	19	110	70
133	14	F	149	59	26.6	120	90		170	15	F	146	38	17.8	100	70		207	16	F	154	52	22	90	70
134	14	F	157	52	21.1	120	90		171	15	F	153	42	17.9	120	70		208	16	F	153	60	26	110	80
135	14	F	143	37	18.1	120	70		172	15	F	156	42	7.3	100	70		209	16	F	146	47	22	112	70
136	14	F	152	45	19.5	110	70		173	15	F	140	36	18.4	110	80		210	16	F	162	48	18	100	70
137	14	F	160	50	19.5	110	70		174	15	F	156	51	21	100	70		211	16	F	155	55	23	110	70
138	14	F	154	47	19.8	108	70		175	15	F	157	43	17.4	104	70		212	16	F	159	46	18	120	70
139	14	F	162	44	16.8	110	70		176	15	F	158	42	16.8	118	72		213	16	F	160	60	23	120	70
140	14	F	153	36	15.4	104	70		177	15	F	151	44	19.3	114	78		214	16	F	160	55	22	100	70
141	14	F	153	45	19.2	120	80		178	15	F	161	50	19.3	122	80		215	16	F	141	51	26	110	80
142	15	F	150	50	22.2	110	70		179	15	F	153	54	23.1	110	90		216	16	F	169	53	19	100	70
143	15	F	152	36	15.6	100	70		180	15	F	155	42	17.5	122	90		217	16	F	155	43	18	110	70
144	15	F	154	39	16.4	110	70		181	15	F	153	57	24.3	124	84		218	16	F	157	42	17	110	70
145	15	F	154	42	17.7	100	70		182	15	F	149	54	24.3	120	90		219	16	F	152	50	22	120	70
146	15	F	158	73	29.2	124	84		183	15	F	155	55	22.9	120	70		220	16	F	157	59	24	110	70
147	15	F	161	62	23.9	122	86		184	15	F	167	45	16.1	100	70		221	16	F	167	72	26	114	70
148	15	F	154	61	25.7	110	80		185	15	F	163	55	20.7	120	70		222	16	F	155	36	15	110	70

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
223	16	F	160	45	17.6	110	70		260	13	M	161	48	18.5	120	80		297	14	M	145	38	18	108	72
224	16	F	162	50	19.1	120	80		261	13	M	151	31	13.6	110	74		298	14	M	160	45	18	124	80
225	16	F	155	58	24.1	124	88		262	13	M	146	27	12.7	100	70		299	14	M	142	36	18	124	80
226	16	F	161	56	21.6	116	96		263	13	M	158	50	20	120	80		300	14	M	165	55	20	110	70
227	16	F	162	47	17.5	116	96		264	13	M	164	63	23.4	126	80		301	14	M	149	33	15	100	70
228	16	F	159	55	21.8	122	88		265	13	M	163	48	18.1	110	82		302	14	M	154	42	18	114	80
229	16	F	150	57	25.3	122	88		266	13	M	158	45	18	118	78		303	14	M	149	45	20	126	84
230	17	F	164	54	20.1	110	70		267	13	M	160	43	16.8	118	82		304	14	M	172	46	16	130	70
231	17	F	155	58	24.1	120	70		268	13	M	145	30	14.3	106	80		305	14	M	154	36	15	106	80
232	17	F	162	64	24.4	126	70		269	13	M	144	31	14.9	106	80		306	14	M	168	47	17	108	76
233	17	F	158	48	19.2	126	70		270	13	M	150	29	12.9	100	78		307	14	M	167	48	17	110	82
234	17	F	152	50	21.6	110	70		271	13	M	140	30	15.3	104	70		308	14	M	162	47	18	110	70
235	17	F	154	52	21.9	100	70		272	13	M	154	39	16.4	120	70		309	14	M	152	42	18	120	80
236	17	F	160	45	17.6	90	70		273	13	M	136	30	16.2	100	70		310	14	M	156	36	15	110	70
237	17	F	154	52	21.9	110	70		274	13	M	148	52	23.7	114	70		311	14	M	148	51	23	110	70
238	17	F	157	55	22.3	110	70		275	13	M	147	45	20.8	90	60		312	14	M	172	61	21	110	70
239	17	F	152	58	25.1	100	70		276	13	M	160	60	23.4	100	70		313	14	M	169	78	27	120	80
240	17	F	157	61	24.7	118	70		277	13	M	142	30	14.9	94	60		314	14	M	174	54	18	110	80
241	17	F	173	60	20	108	70		278	13	M	157	54	21.9	108	70		315	14	M	158	56	22	110	80
242	17	F	162	36	13.7	100	70		279	13	M	140	25	12.8	100	70		316	14	M	179	56	18	120	70
243	17	F	160	52	20.3	120	76		280	13	M	161	45	17.4	96	70		317	14	M	157	62	25	110	80
244	17	F	157	61	24.7	118	70		281	13	M	148	33	15.1	100	70		318	14	M	164	61	23	110	70
245	17	F	154	52	21.9	120	80		282	13	M	164	52	19.3	100	70		319	14	M	166	55	20	120	80
246	17	F	162	55	21	126	70		283	13	M	146	31	14.5	100	70		320	14	M	152	45	20	110	70
247	17	F	162	45	17.1	120	80		284	13	M	142	35	17.4	108	70		321	14	M	157	37	15	100	64
248	17	F	172	80	27	130	80		285	13	M	148	33	15.1	112	80		322	14	M	164	80	30	110	70
249	17	F	151	54	23.7	132	88		286	13	M	157	55	22.3	120	80		323	14	M	160	45	18	100	70
250	13	M	148	40	18.3	106	70		287	14	M	163	42	15.8	110	70		324	14	M	161	50	19	110	70
251	13	M	167	50	16.4	110	70		288	14	M	168	56	19.8	124	80		325	14	M	146	30	14	100	60
252	13	M	153	35	15	100	76		289	14	M	169	55	19.3	136	86		326	14	M	164	90	34	130	90
253	13	M	174	85	28.1	120	80		290	14	M	154	42	17.7	106	68		327	14	M	156	56	23	120	80
254	13	M	168	58	20.5	120	80		291	14	M	157	68	27.6	120	80		328	14	M	161	49	19	110	70
255	13	M	162	61	23.2	110	70		292	14	M	157	68	27.6	124	84		329	14	M	143	30	15	110	70
256	13	M	134	34	18.9	110	70		293	14	M	167	61	21.9	120	86		330	14	M	147	30	14	110	70
257	13	M	169	59	20.7	110	70		294	14	M	166	45	16.3	120	82		331	14	M	160	45	18	120	80
258	13	M	145	35	16.6	120	80		295	14	M	150	45	20	106	70		332	14	M	158	44	18	110	80
259	13	M	153	42	17.9	120	80		296	14	M	144	33	15.9	110	80		333	14	M	158	60	24	120	80

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
334	14	M	144	27	13	100	64		373	15	M	171	50	17.1	120	84		412	16	M	165	53	20	110	68
335	14	M	153	40	17.1	122	70		374	15	M	170	73	15.3	126	80		413	16	M	175	61	20	110	76
336	14	M	146	32	15	110	70		375	15	M	160	50	19.3	124	86		414	16	M	171	55	19	120	80
337	14	M	165	53	19.5	116	72		376	15	M	162	53	20.2	110	70		415	16	M	171	70	24	130	70
338	14	M	162	43	16.4	110	70		377	15	M	165	45	16.5	124	84		416	16	M	168	45	16	120	70
339	14	M	150	46	20.4	100	70		378	15	M	151	50	21.9	124	82		417	16	M	175	76	25	120	70
340	14	M	161	56	21.6	110	70		379	15	M	147	35	16.2	110	70		418	16	M	168	55	20	120	70
341	14	M	164	46	17.1	110	70		380	15	M	158	38	15.2	100	68		419	16	M	162	58	22	114	70
342	14	M	152	35	15.1	120	70		381	15	M	156	38	15.6	110	70		420	16	M	171	72	25	120	70
343	15	M	164	58	21.6	110	80		382	15	M	151	44	19.3	120	80		421	16	M	160	42	16	130	70
344	15	M	174	65	21.5	110	70		383	15	M	174	56	18.5	136	86		422	16	M	172	53	18	110	70
345	15	M	169	57	20	100	70		384	15	M	181	71	21.7	130	80		423	16	M	164	43	16	126	80
346	15	M	167	53	19	110	70		385	15	M	165	51	18.7	120	70		424	16	M	168	73	26	124	80
347	15	M	173	59	19.7	110	70		386	15	M	173	46	15.4	124	80		425	16	M	169	50	18	130	86
348	15	M	172	61	20.6	112	70		387	15	M	168	65	23	124	70		426	16	M	164	42	16	120	80
349	15	M	160	40	15.6	110	70		388	15	M	173	51	17	126	70		427	16	M	156	55	23	118	80
350	15	M	179	83	25.9	120	90		389	15	M	169	59	20.7	120	80		428	16	M	160	57	22	108	84
351	15	M	166	54	19.6	104	78		390	15	M	156	51	21	120	70		429	17	M	168	60	21	110	70
352	15	M	169	58	20.3	110	78		391	15	M	158	47	18.8	130	70		430	17	M	178	67	21	120	80
353	15	M	175	51	16.7	124	82		392	15	M	167	54	19.4	110	70		431	17	M	172	75	25	100	70
354	15	M	168	50	17.7	112	78		393	16	M	164	70	26	110	80		432	17	M	168	55	20	100	70
355	15	M	166	64	23.2	120	82		394	16	M	172	53	17.9	108	60		433	17	M	173	57	19	94	72
356	15	M	168	75	26.6	130	80		395	16	M	184	55	16.2	120	80		434	17	M	174	53	18	100	70
357	15	M	152	40	17.3	110	88		396	16	M	172	65	22	110	70		435	17	M	174	58	19	110	70
358	15	M	150	40	17.8	112	80		397	16	M	177	65	20.7	110	70		436	17	M	159	65	16	120	80
359	15	M	168	65	23	110	70		398	16	M	187	60	17.2	110	70		437	17	M	172	60	20	112	70
360	15	M	173	56	18.7	120	80		399	16	M	169	54	18.9	108	70		438	17	M	171	53	18	126	86
361	15	M	171	52	17.8	120	70		400	16	M	171	63	21.5	90	64		439	17	M	168	53	19	114	76
362	15	M	157	45	18.3	110	70		401	16	M	176	51	18.7	110	70		440	17	M	170	56	19	110	70
363	15	M	154	42	17.7	110	80		402	16	M	170	70	24.2	110	70		441	17	M	171	46	16	120	70
364	15	M	167	55	19.7	120	70		403	16	M	158	37	14.8	120	70		442	17	M	172	52	18	120	70
365	15	M	166	54	19.6	110	86		404	16	M	172	74	25	100	70		443	17	M	170	56	19	120	70
366	15	M	158	45	18	110	70		405	16	M	155	46	19.1	110	80		444	17	M	158	50	20	120	90
367	15	M	171	64	21.9	114	80		406	16	M	178	54	17	100	70		445	17	M	170	55	19	110	80
368	15	M	163	46	17.3	110	70		407	16	M	162	56	21.3	110	70		446	17	M	172	58	20	114	80
369	15	M	179	70	21.8	120	70		408	16	M	162	45	17.1	100	70		447	17	M	168	62	22	134	92
370	15	M	175	53	17.3	100	70		409	16	M	181	54	16.5	100	80		448	17	M	170	65	23	130	82
371	15	M	167	51	18.3	124	80		410	16	M	168	55	19.5	100	70									
372	15	M	155	45	18.7	108	72		411	16	M	164	40	14.9	130	70									

STATISTICS OF SEMI URBAN SCHOOL																								
S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
1	13	F	149	45	20.3	110	80		38	13	F	150	37	16.4	110	80		75	14	F	148	38	13	110	70
2	13	F	139	30	15.5	110	60		39	13	F	145	37	17.6	110	70		76	14	F	141	43	22	110	70
3	13	F	144	30	14.5	100	70		40	13	F	132	27	15.5	110	70		77	14	F	148	36	16	110	70
4	13	F	135	27	14.8	90	70		41	13	F	155	32	13.3	120	70		78	14	F	145	34	16	120	70
5	13	F	136	28	15.1	110	60		42	13	F	143	45	22	110	80		79	14	F	148	40	18	120	80
6	13	F	144	41	19.8	110	70		43	13	F	141	38	19.1	110	80		80	14	F	149	33	15	120	80
7	13	F	155	39	16.2	120	70		44	13	F	140	40	20.4	120	70		81	14	F	148	37	17	120	80
8	13	F	146	40	18.8	110	80		45	13	F	143	33	18.4	110	80		82	14	F	154	45	19	120	80
9	13	F	137	39	20.8	130	80		46	13	F	135	35	19.2	110	80		83	14	F	140	40	20	110	80
10	13	F	155	40	16.6	110	90		47	13	F	140	27	13.8	120	80		84	14	F	140	30	15	100	70
11	13	F	142	36	17.9	120	70		48	13	F	150	38	16.9	110	80		85	14	F	140	42	21	120	70
12	13	F	155	45	18.7	110	80		49	13	F	151	38	16.7	120	70		86	14	F	152	45	20	120	80
13	13	F	137	43	22.9	120	70		50	13	F	140	29	14.8	110	80		87	14	F	150	42	19	100	80
14	13	F	148	39	17.8	120	80		51	13	F	158	55	22	110	70		88	14	F	141	43	22	100	70
15	13	F	144	40	19.3	110	80		52	13	F	144	39	18.8	110	70		89	14	F	153	38	16	100	70
16	13	F	148	34	15.5	120	80		53	13	F	147	30	13.9	100	70		90	14	F	145	30	14	120	70
17	13	F	137	30	16	110	80		54	13	F	142	25	12.4	110	70		91	14	F	143	43	21	110	80
18	13	F	144	35	16.9	120	70		55	13	F	148	35	15.9	110	80		92	14	F	142	37	18	120	70
19	13	F	147	35	16.2	120	80		56	13	F	143	30	14.6	110	80		93	14	F	142	32	16	110	80
20	13	F	147	35	16.2	110	80		57	13	F	146	37	17.3	100	80		94	14	F	149	40	18	110	70
21	13	F	159	58	22.9	110	70		58	13	F	141	43	21.6	90	70		95	14	F	152	53	23	110	70
22	13	F	146	49	23	110	70		59	13	F	140	30	15.3	130	60		96	14	F	148	45	21	120	70
23	13	F	150	40	17.8	100	70		60	13	F	143	45	22	100	80		97	14	F	154	50	21	110	80
24	13	F	140	30	15.3	100	60		61	13	F	152	35	15.1	110	60		98	14	F	150	43	19	120	80
25	13	F	144	35	16.9	100	60		62	13	F	138	31	16.2	110	80		99	14	F	140	35	18	120	80
26	13	F	150	35	15.6	120	80		63	13	F	140	27	13.7	110	80		100	14	F	160	54	21	110	80
27	13	F	151	35	15.4	120	80		64	14	F	156	46	18.9	110	70		101	14	F	140	40	20	120	80
28	13	F	146	45	21.1	120	80		65	14	F	137	32	17	100	70		102	14	F	152	50	22	120	80
29	13	F	145	49	24.6	120	80		66	14	F	147	42	19.4	110	70		103	14	F	149	65	29	110	80
30	13	F	133	25	14.1	110	80		67	14	F	142	39	19.3	110	70		104	14	F	136	36	20	130	70
31	13	F	154	36	15.2	130	70		68	14	F	154	47	19.8	120	80		105	14	F	130	25	15	130	70
32	13	F	147	30	13.9	120	90		69	14	F	145	35	16.6	110	80		106	14	F	153	41	18	100	80
33	13	F	149	55	24.8	100	80		70	14	F	140	47	24	120	70		107	14	F	148	40	18	120	70
34	13	F	140	30	15.3	110	70		71	14	F	154	45	19	110	80		108	14	F	135	54	20	110	80
35	13	F	150	40	17.8	110	80		72	14	F	150	35	15.6	120	70		109	14	F	148	37	17	120	70
36	13	F	146	62	29.1	110	90		73	14	F	140	51	26	120	80		110	14	F	145	58	28	110	80
37	13	F	150	53	23.6	120	90		74	14	F	137	38	14.9	110	80		111	14	F	141	36	18	110	70

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
112	14	F	147	35	16.2	120	70		149	15	F	150	40	17.7	110	70		186	15	F	147	39	20	110	80
113	14	F	141	44	22.1	110	80		150	15	F	147	34	15.7	110	70		187	15	F	148	41	19	120	70
114	14	F	145	37	17.6	100	70		151	15	F	140	40	20.4	110	70		188	15	F	149	40	18	110	80
115	14	F	152	44	19	120	70		152	15	F	140	38	19.3	120	70		189	15	F	155	40	17	110	70
116	14	F	144	37	17.8	120	80		153	15	F	147	45	20.8	120	80		190	15	F	151	53	23	110	80
117	14	F	135	40	21.9	120	80		154	15	F	154	70	29.5	120	80		191	15	F	150	48	21	110	70
118	14	F	155	46	19.1	100	80		155	15	F	152	56	24.2	120	80		192	15	F	152	43	8.6	110	70
119	14	F	139	31	16	120	70		156	15	F	149	53	23.8	110	80		193	15	F	152	59	26	110	80
120	14	F	155	50	20.8	110	80		157	15	F	149	44	19.8	120	70		194	15	F	148	45	21	110	70
121	14	F	143	32	15.6	120	70		158	15	F	147	46	21.3	110	80		195	15	F	154	34	14	120	70
122	14	F	147	37	17.1	110	80		159	15	F	151	47	20.6	110	70		196	15	F	160	36	14	110	80
123	14	F	132	33	18.9	110	70		160	15	F	148	43	19.6	110	70		197	15	F	156	44	18	120	80
124	14	F	145	33	15.7	110	70		161	15	F	145	43	20.5	110	80		198	15	F	157	45	18	130	80
125	14	F	151	54	23.7	110	70		162	15	F	150	37	16.4	110	70		199	15	F	151	51	22	110	90
126	14	F	154	50	21.1	110	70		163	15	F	156	48	19.7	110	70		200	15	F	160	48.5	19	120	70
127	14	F	155	61	25.4	120	70		164	15	F	152	48	20.8	120	70		201	15	F	147	35	16	110	80
128	14	F	146	42	19.7	110	80		165	15	F	180	44	13.6	120	80		202	15	F	159	43	17	110	70
129	14	F	141	40	20.1	120	70		166	15	F	140	37	18.9	110	80		203	15	F	142	45	22	120	70
130	14	F	156	60	24.7	110	80		167	15	F	155	49	20.4	120	80		204	15	F	147	45	21	120	80
131	14	F	140	30	15.3	110	70		168	15	F	144	44	21.2	110	80		205	15	F	160	54	21	110	80
132	14	F	149	36	16.2	110	70		169	15	F	150	49	21.8	120	70		206	15	F	149	52	23	110	80
133	14	F	157	64	26	110	70		170	15	F	149	49	22.1	110	80		207	15	F	154	47	20	110	80
134	14	F	149	48	21.6	110	70		171	15	F	140	33	16.8	110	80		208	15	F	143	42	21	110	70
135	14	F	154	28	13.3	110	70		172	15	F	164	49	18.2	110	70		209	15	F	149	55	25	110	70
136	14	F	149	40	18	110	70		173	15	F	137	35	18.6	120	70		210	15	F	157	43	17	110	70
137	14	F	130	28	16.5	120	70		174	15	F	151	43	18.9	120	80		211	15	F	156	38	16	120	80
138	14	F	141	40	20.1	110	80		175	15	F	150	40	17.8	110	80		212	15	F	145	48	23	110	70
139	14	F	144	32	15.4	120	70		176	15	F	143	34	16.6	110	70		213	15	F	50	39	17	120	80
140	14	F	150	52	23.1	120	80		177	15	F	142	34	16.9	110	70		214	15	F	148	39	18	110	70
141	14	F	145	52	24.7	110	80		178	15	F	147	40	18.5	110	70		215	16	F	144	52	25	110	80
142	14	F	145	54	25.6	100	70		179	15	F	153	45	19.2	110	70		216	16	F	130	36	21	130	70
143	14	F	139	31	16	120	70		180	15	F	145	41	19.5	110	80		217	16	F	146	52	24	110	90
144	14	F	155	46	19.1	120	80		181	15	F	148	38	17.3	120	70		218	16	F	158	37	15	110	70
145	14	F	135	40	21.9	120	80		182	15	F	160	46	18	110	80		219	16	F	156	47	19	110	70
146	14	F	144	37	17.8	110	80		183	15	F	147	43	19.9	110	80		220	16	F	155	40	17	110	80
147	15	F	155	43	17.8	110	80		184	15	F	143	37	18.1	110	70		221	16	F	146	35	16	120	70
148	15	F	140	34	17.3	110	70		185	15	F	160	55	21.5	110	70		222	16	F	144	40	19	110	80

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
223	16	F	154	54	22.8	110	70		260	16	F	149	45	20.3	120	70		297	16	F	149	45	20	120	70
224	16	F	154	38	16	110	68		261	16	F	146	52	19.7	110	80		298	16	F	145	31	15	120	80
225	16	F	140	30	15.3	120	80		262	16	F	147	40	18.5	120	80		299	16	F	146	40	19	100	80
226	16	F	159	50	19.8	120	80		263	16	F	145	37	17.6	120	80		300	16	F	158	46	18	110	70
227	16	F	154	54	22.8	130	80		264	16	F	160	48	18.7	110	80		301	16	F	150	50	22	110	70
228	16	F	156	44	18.1	110	80		265	16	F	140	44	22.4	110	70		302	16	F	139	42	22	110	70
229	16	F	152	38	16.4	130	80		266	16	F	145	38	18.1	110	70		303	16	F	149	45	20	110	70
230	16	F	149	46	20.7	100	90		267	16	F	159	51	20.2	120	70		304	16	F	145	39	19	110	70
231	16	F	154	37	15.6	120	80		268	16	F	149	44	19.8	110	80		305	16	F	153	38	16	120	70
232	16	F	156	54	22.2	110	80		269	16	F	168	51	18.1	110	80		306	16	F	148	50	23	120	80
233	16	F	154	48	20.2	100	80		270	16	F	150	44	19.6	120	70		307	16	F	165	55	20	110	80
234	16	F	164	43	16	110	80		271	16	F	144	50	24.1	120	80		308	16	F	157	48	19	100	70
235	16	F	156	38	15.6	110	80		272	16	F	170	45	15.6	120	80		309	16	F	157	45	18	110	70
236	16	F	160	45	17.6	120	70		273	16	F	158	50	20	110	80		310	16	F	162	51	19	120	70
237	16	F	156	50	20.5	120	80		274	16	F	165	50	18.4	110	70		311	16	F	152	43	19	120	90
238	16	F	147	36	16.7	120	80		275	16	F	163	40	15.1	120	70		312	16	F	160	55	21	120	80
239	16	F	157	38	15.4	120	80		276	16	F	154	45	18.7	110	80		313	16	F	150	48	21	120	90
240	16	F	152	43	18.6	110	80		277	16	F	155	35	17.1	110	70		314	17	F	150	45	20	120	70
241	16	F	152	42	18.2	120	80		278	16	F	143	37	16.7	110	80		315	17	F	152	43	19	120	80
242	16	F	163	43	16.2	110	80		279	16	F	149	40	17.8	110	70		316	17	F	151	40	18	120	80
243	16	F	150	48.5	21.6	120	80		280	16	F	150	50	21.4	120	70		317	17	F	146	43	20	120	80
244	16	F	161	47	18.1	120	80		281	16	F	153	36	18.4	120	80		318	17	F	157	43	17	120	80
245	16	F	155	56	23.3	120	80		282	16	F	140	42	16.4	120	80		319	17	F	146	38	18	120	80
246	16	F	159	52	20.6	120	80		283	16	F	160	38	17.8	120	80		320	17	F	152	37	16	110	80
247	16	F	159	43	17	120	80		284	16	F	46	37	16	110	80		321	17	F	149	44	20	120	70
248	16	F	158	49	19.6	120	80		285	16	F	152	51	20.4	110	70		322	17	F	165	52	19	110	80
249	16	F	160	56	21.9	130	80		286	16	F	158	36	16	100	70		323	17	F	158	51	20	110	70
250	16	F	160	60	21.8	110	90		287	16	F	150	41	18.2	120	80		324	17	F	138	56	29	110	70
251	16	F	159	57	22.5	120	70		288	16	F	150	55	21.5	120	80		325	17	F	155	48	20	120	70
252	16	F	166	43	15.6	110	80		289	16	F	160	43	18.6	110	90		326	17	F	153	40	17	110	80
253	16	F	147	42	19.4	110	70		290	16	F	152	51	19.4	100	70		327	17	F	149	39	18	110	70
254	16	F	147	43	19.9	110	70		291	16	F	157	45	18.3	110	70		328	17	F	149	48	22	110	70
255	16	F	148	46	21	120	70		292	16	F	157	48	19.5	120	70		329	17	F	147	40	19	110	70
256	16	F	144	38	18.3	120	80		293	16	F	165	55	20.2	120	80		330	17	F	145	46	22	120	70
257	16	F	159	48	19	120	80		294	16	F	148	50	22.8	110	80		331	17	F	138	35	18	120	80
258	16	F	144	34	16.4	120	80		295	16	F	153	38	16.2	110	70		332	17	F	135	39	21	110	80
259	16	F	150	52	23.1	110	80		296	16	F	145	39	18.5	110	70		333	17	F	154	50	21	120	70

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
334	17	F	150	48	21.3	120	80		371	13	M	136	30	16.2	100	70		408	13	M	150	53	24	120	80
335	17	F	150	64	28.4	110	80		372	13	M	144	42	20.3	120	80		409	13	M	159	55	22	120	70
336	17	F	153	45	19.2	120	70		373	13	M	146	34	16	110	80		410	13	M	145	40	19	110	70
337	17	F	148	48	21.9	110	80		374	13	M	149	40	18	100	70		411	13	M	136	24	13	110	60
338	17	F	150	38	16.9	110	70		375	13	M	140	32	16.3	110	70		412	13	M	135	27	15	110	60
339	17	F	160	54	21.1	110	70		376	13	M	139	29	15	120	80		413	13	M	145	30	14	100	60
340	17	F	153	45	19.2	120	70		377	13	M	151	38	16.7	110	70		414	13	M	145	34	16	110	60
341	17	F	153	45	19.2	110	80		378	13	M	145	40	19	100	70		415	13	M	147	35	16	100	60
342	17	F	155	45	18.7	100	70		379	13	M	139	35	18.1	110	70		416	13	M	140	30	15	102	80
343	17	F	150	35	15.6	120	70		380	13	M	140	30	15.3	100	70		417	13	M	133	28	16	100	70
344	17	F	150	44	19.6	120	80		381	13	M	142	30	14.9	110	70		418	13	M	147	37	17	110	80
345	17	F	163	50	18.8	120	80		382	13	M	148	32	14.6	110	80		419	13	M	146	45	21	110	70
346	17	F	150	58	25.8	110	70		383	13	M	140	33	15.5	110	90		420	13	M	153	32	14	100	70
347	17	F	157	47	19.1	120	70		384	13	M	152	38	16.4	120	80		421	13	M	150	57	25	130	90
348	17	F	164	50	18.6	110	80		385	13	M	153	50	21.4	110	80		422	13	M	150	57	25	120	80
349	17	F	161	43	16.6	120	70		386	13	M	145	60	28.5	110	80		423	13	M	148	37	17	110	70
350	17	F	158	48	19.2	120	80		387	13	M	160	40	15.6	120	80		424	13	M	138	30	16	100	60
351	17	F	148	55	25.1	120	80		388	13	M	148	43	19.6	110	70		425	13	M	147	35	16	110	80
352	17	F	158	45	18	120	80		389	13	M	150	53	23.6	120	70		426	13	M	143	29	14	100	60
353	17	F	145	33	15.7	120	80		390	13	M	135	27	14.8	110	70		427	13	M	132	25	14	100	60
354	17	F	165	53	19.5	120	80		391	13	M	148	39	17.8	90	70		428	13	M	150	35	16	110	70
355	17	F	147	40	18.5	110	80		392	13	M	144	40	19.3	110	80		429	13	M	145	45	21	110	80
356	17	F	158	44	17.6	110	70		393	13	M	149	30	13.5	100	70		430	13	M	135	30	17	110	70
357	17	F	168	50	17.7	110	80		394	13	M	153	50	21.4	120	80		431	13	M	138	32	17	100	60
358	17	F	150	45	20	120	70		395	13	M	138	32	16.8	110	80		432	13	M	154	40	17	110	80
359	17	M	152	43	18.6	120	80		396	13	M	153	35	15	100	60		433	13	M	149	46	21	120	80
360	17	M	151	40	17.5	120	80		397	13	M	150	40	17.8	110	70		434	13	M	140	36	18	100	60
361	17	M	146	43	20.2	120	80		398	13	M	149	30	13.5	110	70		435	13	M	130	26	15	110	70
362	17	M	157	43	17.4	110	80		399	13	M	145	34	16.2	110	70		436	13	M	135	25	14	100	60
363	17	M	149	44	22.1	120	70		400	13	M	148	44	20.1	120	80		437	13	M	145	33	16	100	60
364	17	M	165	52	19.1	110	80		401	13	M	133	23	13	100	70		438	13	M	143	36	18	110	70
365	17	M	143	45	22	120	70		402	13	M	145	36	17.1	130	90		439	13	M	140	30	15	120	70
366	17	M	150	54	24	100	80		403	13	M	138	27	14.2	110	70		440	13	M	152	35	15	90	70
367	13	M	143	36	17.6	110	70		404	13	M	155	60	25	130	80		441	13	M	136	33	18	110	70
368	13	M	140	30	15.3	120	70		405	13	M	140	28	14.3	110	70		442	13	M	136	30	16	100	70
369	13	M	152	35	15.1	90	70		406	13	M	153	52	22.2	110	70		443	13	M	144	42	20	120	80
370	13	M	136	33	17.8	110	70		407	13	M	140	35	17.9	120	80		444	13	M	146	34	16	110	80

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
445	13	M	149	40	18	100	70		482	14	M	153	40	17.1	110	90		519	14	M	161	56	22	110	70
446	14	M	160	46	18	90	70		483	14	M	154	40	16.9	100	70		520	14	M	143	30	15	110	80
447	14	M	141	34	17.1	130	60		484	14	M	138	34	17.9	110	70		521	14	M	150	39	17	110	70
448	14	M	143	36	17.6	110	90		485	14	M	148	40	18.3	100	80		522	14	M	154	42	18	100	70
449	14	M	149	34	15.3	110	80		486	14	M	136	30	16.2	130	60		523	14	M	156	42	17	140	70
450	14	M	140	35	17.9	100	80		487	14	M	143	35	17.1	100	80		524	14	M	168	48	17	110	90
451	14	M	137	34	18.1	100	70		488	14	M	152	35	15.1	110	70		525	14	M	148	46	21	110	80
452	14	M	140	34	17.3	110	60		489	14	M	146	42	19.7	120	80		526	14	M	149	41	19	120	60
453	14	M	141	30	15.1	120	80		490	14	M	140	34	17.3	100	70		527	14	M	161	46	18	100	80
454	14	M	139	30	15.5	120	70		491	14	M	147	35	16.2	110	70		528	14	M	139	27	14	110	70
455	14	M	153	40	17.1	110	80		492	14	M	155	43	17.9	110	80		529	14	M	165	46	17	110	70
456	14	M	151	41	18	110	70		493	14	M	144	33	15.9	100	80		530	14	M	163	55	21	130	70
457	14	M	144	36	17.4	100	70		494	14	M	146	34	16	100	70		531	14	M	158	45	18	110	70
458	14	M	143	30	14.7	110	70		495	14	M	145	33	15.7	110	60		532	14	M	137	33	18	110	70
459	14	M	144	32	15.9	120	70		496	14	M	140	30	15.3	120	70		533	14	M	149	36	16	120	70
460	14	M	160	41	16	120	70		497	14	M	149	47	21.2	120	80		534	14	M	151	55	24	120	70
461	14	M	161	50	19.3	120	70		498	14	M	152	47	20.3	140	80		535	14	M	138	25	13	110	70
462	14	M	150	35	15.6	100	80		499	14	M	164	63	23.4	120	80		536	14	M	150	36	16	100	80
463	14	M	150	37	16.4	110	60		500	14	M	159	60	23.7	110	80		537	14	M	160	46	18	90	70
464	14	M	143	33	16.1	140	70		501	14	M	140	31	15.8	120	80		538	14	M	141	34	17	130	60
465	14	M	165	46	16.9	110	90		502	14	M	146	55	25.8	120	80		539	14	M	143	36	18	110	90
466	14	M	143	37	18.1	110	70		503	14	M	150	45	20	120	80		540	14	M	149	34	15	110	80
467	14	M	138	30	15.8	120	70		504	14	M	154	37	15.6	120	80		541	14	M	140	35	18	100	80
468	14	M	148	40	18.3	120	80		505	14	M	165	55	20.2	120	80		542	14	M	137	34	18	100	70
469	14	M	153	41	17.5	100	70		506	14	M	171	50	17.1	120	80		543	14	M	140	34	17	110	60
470	14	M	141	27	13.6	130	60		507	14	M	140	30	15.1	110	80		544	15	M	141	30	15	120	80
471	14	M	143	38	18.6	130	60		508	14	M	140	30	15.3	120	80		545	15	M	171	57	20	130	80
472	14	M	142	48	23.8	110	90		509	14	M	157	45	18.3	110	80		546	15	M	160	55	22	120	70
473	14	M	135	61	25.4	110	70		510	14	M	141	30	15.1	110	70		547	15	M	145	43	21	130	80
474	14	M	143	30	14.7	110	80		511	14	M	129	25	15	110	70		548	15	M	152	60	26	110	80
475	14	M	134	28	15.6	120	80		512	14	M	149	38	12.6	110	80		549	15	M	140	35	18	130	70
476	14	M	149	35	15.8	110	80		513	14	M	140	32	16.3	110	80		550	15	M	160	48	19	110	90
477	14	M	133	30	17	110	70		514	14	M	148	40	18.3	130	80		551	15	M	157	65	26	130	70
478	14	M	145	35	16.6	110	80		515	14	M	150	40	17.8	110	70		552	15	M	170	70	24	120	90
479	14	M	139	31	16	120	80		516	14	M	140	50	25.5	130	80		553	15	M	152	50	22	100	80
480	14	M	157	40	16.2	100	80		517	14	M	152	43	18.6	100	90		554	15	M	155	40	17	100	70
481	14	M	139	30	15.5	120	60		518	14	M	141	30	15.1	120	70		555	15	M	154	45	21	130	80

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
556	15	M	149	42	19	110	80		593	15	M	165	45	17	120	80		630	16	M	166	66	24	110	80
557	15	M	162	50	19	110	70		594	15	M	152	53	23	120	80		631	16	M	142	36	18	110	70
558	15	M	160	50	20	120	80		595	15	M	141	33	17	120	80		632	16	M	161	55	21	110	80
559	15	M	160	67	26	110	70		596	15	M	144	38	18	110	80		633	16	M	146	39	18	120	70
560	15	M	142	40	20	120	70		597	15	M	145	42	20	120	80		634	16	M	162	58	22	110	80
561	15	M	162	50	19	110	80		598	15	M	163	47	18	130	80		635	16	M	149	35	16	120	70
562	15	M	144	41	20	120	70		599	15	M	168	53	19	130	90		636	16	M	178	57	18	110	80
563	15	M	155	40	17	120	80		600	15	M	157	55	22	130	90		637	16	M	153	50	20	130	80
564	15	M	141	35	18	130	80		601	15	M	165	58	21	110	90		638	16	M	155	52	22	130	70
565	15	M	148	35	16	120	90		602	15	M	167	50	18	110	70		639	16	M	164	42	16	110	80
566	15	M	142	35	17	120	80		603	15	M	145	34	16	120	70		640	16	M	161	43	17	140	80
567	15	M	152	55	24	100	80		604	15	M	157	48	20	110	80		641	16	M	173	52	17	130	90
568	15	M	145	35	17	110	60		605	15	M	156	44	18	110	60		642	16	M	174	58	19	110	70
569	15	M	165	66	24	120	80		606	15	M	158	43	17	110	80		643	16	M	160	40	16	120	70
570	15	M	156	44	18	130	80		607	15	M	151	40	18	110	80		644	16	M	163	49	18	110	90
571	15	M	150	48	21	120	90		608	15	M	148	35	16	110	80		645	16	M	168	48	17	120	70
572	15	M	147	35	16	110	80		609	15	M	156	47	19	100	70		646	16	M	168	51	18	120	70
573	15	M	145	45	21	100	80		610	15	M	164	50	19	110	70		647	16	M	173	45	15	120	80
574	15	M	149	38	17	110	60		611	15	M	156	37	15	110	70		648	16	M	175	53	17	130	80
575	15	M	167	53	19	110	80		612	15	M	151	42	18	120	80		649	16	M	187	75	21	130	90
576	15	M	50	32	14	110	60		613	15	M	149	40	18	110	70		650	16	M	164	45	17	130	90
577	15	M	159	52	21	110	70		614	15	M	146	40	19	120	70		651	16	M	157	50	20	120	90
578	15	M	142	40	20	120	70		615	15	M	160	48	19	120	80		652	16	M	180	54	17	120	80
579	15	M	154	35	15	100	80		616	15	M	147	40	19	130	70		653	16	M	167	65	23	110	80
580	15	M	137	30	16	130	70		617	15	M	150	45	20	120	80		654	16	M	164	45	17	130	70
581	15	M	168	52	18	110	90		618	15	M	147	38	18	100	70		655	16	M	178	60	19	120	90
582	15	M	143	36	18	120	80		619	15	M	159	36	14	120	60		656	16	M	159	54	21	130	80
583	15	M	57	59	24	120	70		620	15	M	161	45	17	120	70		657	16	M	169	52	18	110	80
584	15	M	168	54	19	110	80		621	15	M	143	30	15	110	80		658	16	M	163	41	15	110	80
585	15	M	165	45	7	130	70		622	15	M	160	45	16	120	80		659	16	M	147	35	17	110	70
586	15	M	147	40	19	130	80		623	15	M	152	53	23	110	80		660	16	M	146	34	16	120	70
587	15	M	168	53	9	100	70		624	15	M	140	35	18	120	80		661	16	M	163	47	18	110	80
588	15	M	144	34	16	130	60		625	15	M	145	47	22	120	70		662	16	M	165	43	16	110	80
589	15	M	154	45	19	120	90		626	15	M	161	45	17	130	80		663	16	M	170	45	16	110	70
590	15	M	158	48	19	110	80		627	15	M	154	56	24	90	80		664	16	M	167	66	17	110	70
591	15	M	142	48	24	110	70		628	15	M	144	30	15	110	60		665	16	M	162	45	17	120	80
592	15	M	165	43	16	120	80		629	15	M	153	45	19	110	80		666	16	M	161	44	17	120	70

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
667	16	M	171	50	17.1	130	80		704	16	M	141	35	17	110	80		741	16	M	166	66	24	110	80
668	16	M	151	54	23.7	110	80		705	16	M	144	35	17	130	70		742	16	M	142	36	18	110	70
669	16	M	153	38	16.2	110	80		706	16	M	176	60	19.4	120	90		743	16	M	161	55	21	110	80
670	16	M	139	35	18.1	120	70		707	16	M	173	59	19.7	130	80		744	17	M	166	49	18	120	80
671	16	M	159	47	18.6	110	80		708	16	M	170	48	16.6	120	90		745	17	M	157	47	19	120	90
672	16	M	156	48	19.7	130	80		709	16	M	165	52	19.1	120	80		746	17	M	155	50	21	120	80
673	16	M	154	41	17.3	120	80		710	16	M	175	56	18.3	120	80		747	17	M	155	45	19	130	90
674	16	M	153	39	16.7	110	80		711	16	M	166	45	16.3	130	80		748	17	M	155	67	28	100	90
675	16	M	157	43	17.4	130	70		712	16	M	160	53	20.7	110	90		749	17	M	144	34	16	100	60
676	16	M	170	65	22.5	110	90		713	16	M	162	53	20.2	120	70		750	17	M	163	45	17	140	70
677	16	M	142	30	14.9	100	70		714	16	M	157	53	22.1	120	80		751	17	M	162	64	24	110	80
678	16	M	152	50	21.6	120	60		715	16	M	174	77	24.1	130	80		752	17	M	176	55	18	130	80
679	16	M	159	54	21.4	120	80		716	16	M	154	38	16	130	80		753	17	M	167	64	23	130	90
680	16	M	160	45	17.6	120	80		717	16	M	161	61	23.5	120	90		754	17	M	170	57	20	130	80
681	16	M	148	39	17.8	120	70		718	16	M	171	43	14.7	110	70		755	17	M	163	51	19	120	80
682	16	M	167	54	19.4	120	70		719	16	M	159	39	15.4	130	80		756	17	M	161	48	19	140	80
683	16	M	160	57	22.3	120	80		720	16	M	173	57	19	120	90		757	17	M	159	53	21	120	80
684	16	M	159	57	22.5	120	80		721	16	M	163	45	16.9	120	80		758	17	M	166	49	18	110	80
685	16	M	160	40	18	110	70		722	16	M	164	43	16	120	80		759	17	M	154	45	17	110	80
686	16	M	143	50	19.5	110	70		723	16	M	163	50	18.3	120	90		760	17	M	161	55	21	110	80
687	16	M	155	38	14.8	130	70		724	16	M	172	55	18.6	130	80		761	17	M	140	35	18	120	80
688	16	M	159	46	22.5	120	80		725	16	M	160	55	21.5	130	90		762	17	M	163	45	17	130	80
689	16	M	158	51	20.2	120	80		726	16	M	171	55	18.8	120	90		763	17	M	163	50	19	130	80
690	16	M	162	50	20	120	70		727	16	M	164	43	15.9	120	80		764	17	M	165	60	22	140	80
691	16	M	165	56	21.3	100	80		728	16	M	163	45	16.9	130	80		765	17	M	160	52	20	130	90
692	16	M	150	35	15.6	110	60		729	16	M	173	57	19	120	90		766	17	M	165	65	24	120	80
693	16	M	165	45	6.5	120	70		730	16	M	171	43	14.7	110	70		767	17	M	164	66	25	120	80
694	16	M	168	49	17.4	120	80		731	16	M	159	39	15.4	130	80		768	17	M	145	40	19	110	80
695	16	M	180	64	19.8	120	80		732	16	M	161	61	23.5	130	90		769	17	M	155	45	19	140	70
696	16	M	155	48	20	120	80		733	16	M	159	38	15	120	80		770	17	M	159	51	20	140	90
697	16	M	168	56	19.8	110	70		734	16	M	172	55	18.5	130	80		771	17	M	165	65	24	130	90
698	16	M	155	44	18.3	110	70		735	16	M	171	55	18.8	110	90		772	17	M	160	55	22	110	80
699	16	M	169	53	18.6	120	80		736	16	M	143	43	21	110	80		773	17	M	169	50	18	110	70
700	16	M	158	45	18	110	80		737	16	M	165	47	17.3	110	70		774	17	M	168	50	18	120	80
701	16	M	167	50	17.9	120	70		738	16	M	174	75	24.8	110	80		775	17	M	173	48	16	130	80
702	16	M	165	49	18	130	80		739	16	M	160	49	19.1	110	80		776	17	M	170	54	19	120	80
703	16	M	170	77	26.6	130	90		740	16	M	140	35	17.9	120	70		777	17	M	172	54	18	120	80

S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP		S.No	Age	Sex	Height	Weight	BMI	SBP	DBP
778	17	M	168	49	15.2	130	80		796	17	M	170	44	15.2	120	90		814	17	M	162	47	18	110	70
779	17	M	169	68	23.8	130	90		797	17	M	158	47	18.8	120	80		815	17	M	149	33	15	110	70
780	17	M	167	48	17.2	140	90		798	17	M	173	48	16	120	80		816	17	M	162	44	17	110	80
781	17	M	172	57	19.3	130	90		799	17	M	177	56	17.9	120	80		817	17	M	158	50	20	130	70
782	17	M	171	48	16.4	110	80		800	17	M	175	67	21.9	120	80		818	17	M	173	47	16	110	90
783	17	M	179	61	19	130	70		801	17	M	170	50	17.3	110	80		819	17	M	150	48	21	120	70
784	17	M	162	53	20.2	120	90		802	17	M	167	49	17.6	110	90		820	17	M	156	55	23	120	80
785	17	M	178	69	21.8	120	80		803	17	M	160	56	21.9	110	70		821	17	M	157	53	22	110	80
786	17	M	166	43	15.6	110	80		804	17	M	165	43	15.8	130	70		822	17	M	150	48	21	120	90
787	17	M	165	51	18.7	120	80		805	17	M	178	57	18	120	90		823	17	M	156	55	23	110	80
788	17	M	168	44	15.6	120	70		806	17	M	168	44	15.6	130	80		824	17	M	158	50	20	130	70
789	17	M	153	46	19.7	120	80		807	17	M	172	54	18.3	120	90		825	17	M	173	47	16	110	80
790	17	M	159	45	17.8	120	80		808	17	M	159	37	14.6	110	80		826	17	M	150	48	21	100	70
791	17	M	172	60	20.3	130	80		809	17	M	145	34	16.2	110	80		827	17	M	163	45	17	120	70
792	17	M	160	63	24.6	120	70		810	17	M	167	45	16.1	130	80		828	17	M	170	57	20	130	80
793	17	M	168	56	19.8	140	80		811	17	M	169	40	16.1	120	90		829	17	M	163	51	19	140	80
794	17	M	169	51	17.9	130	90		812	17	M	181	63	19.2	130	80		830	17	M	159	53	21	120	80
795	17	M	165	44	16.2	130	90		813	17	M	169	54	18.9	100	90									

BIBLIOGRAPHY

1. Indranil sahe, DK Raut, Boby Paul et al – ***IJPH***, Vol 51, No.3, July – Sep, 2007.
2. Larimaore J.W., A study of blood pressure in relation to types of bodily habites. ***Arch int. medicine*** 1923; 32 : 567 – 72
3. Stamler R, Stamler J, Reidinger WF et al, weight and blood pressure: Findings in Hypertension screening of million Americans ***JAMA*** 1978;240:1607-10
4. Mac Mahon SW, Blacket RB, Mac donel GJ et al; obesity, alcohol consumption foundation of Anotralia risk factor prevalence study. ***J.Hypertension*** 1984;2: 85-91.
5. Schotte DE, Stunkard AJ. The effect of weight reduction and blood pressure in 203 obese patients. ***Arch internal med.*** 1990;150:1990.
6. Hypertension prevention trial research group. The hypertention prevention trial : Three year effect of dietary changes on BP. ***Arch.Int.Med*** 1990; 15: 153-62.
7. Keys A, FidanzaF, Karronen MJ et al. Indices of relative weight and obesity. ***J.Chronic disea***se 1972; 25: 329-43.
8. Pi-Suryer Fx. Medical Hazards of obesity. Ann Internal med. 1993; 119 : 655-60.

9. Stevens J, Cai J, Pamuk ER, Williamson DF, Thun MJ, Wood JL et al. The effect of age on the association between body mass index and mortality. N.Engl J Med 1998; 38:1-.
10. Ni mhurchu C, Rodgers A, Pan WH, GUDF, Wood ward M. et al (Asia pacific pacific Region ***Int.J.Epidemial*** 2004; 33 : 751-750
11. Cassano P, Segal M, Vokonas P, Weiss ST. et al. Body fat distribution, blood pressure, and hypertension : a prospective cohort study of men in the normotensive aging study. ***Ann Epidemiol*** 1990 ; 1: 33-48.
12. Dyer Ar, Elliot T, for the intersalt cooperative research group. The intersalt study : relations of body mass index to blood pressure ***J Hum Hypertention*** 1980 ; 3: 299-308.
13. Sorof.J, & Daniel (2002) obesity, and Hypertension in children: A problem of epidemic proportions ***Hypertension 2002 Oct;*** 40(4) : 441-447.
14. He Q, Ding ZY, Fong DY & Karlberg J et al (2000) Blood pressure is associated with BMI in both normal and obese children. ***Hypertension 2002 Aug*** 36(2) : 165-170.
15. Barba G, Troiaro E, Russo P, Strazzullo P, Siani A et al. ***Nutrition metabolism & cardio vascular disease*** 2006 May ; 16(4) : 239-48.

16. Sorof JM, Lai D, Turner J, Poffen berger T, Portmann RJ et al over weight, ethnicity and the prevalence of HT in school aged children. ***Pediatrics*** 2994 mar;1113 (34) : 475 – 82

17. Cole T J, Bellizzi MC, Flegal KM, Dietz WH et al Establishing a standard definition for over weight and obesity world wide : International surgery ***BMJ*** 2006 May : 320 (72 4G) : 1240 – 43.

18. Nelson T.B. of 18th edition Nutrition : Vol I Page No: 234.

19. Reilly JJ, Dorosty Ar et al, at identification of obese child, Adequacy of the BMI for clinical practice and epidemiology: ***International Journal of Obesity related metabolic disorders*** 24; 1623 – 27, 2000.

20. WHO/ISAO/IOTF the Asia Pacific perspective redefining obesity and its treatment. Health communication Australia RT, Ltd., 2000

21. WHO physical status. The use and interpretation of Anthropometry. Reports of WHO expert committee, WHO technical report series J54, Genera WHO ; 1995.

22. Nelson Text Book of Pediatrics 17th edition Page 173.

23. Agarwal et al, Physical growth assessment in Adolescents, Indian ***Pediatrics*** 2001; 38 ; 1217 – 1235

24. Sheila Bhave et al, Child hood prevention of Adult diseases; Childhood obesity, ***Indian Pediatrics*** Vol.41, June 17, 2004; 560.

25. Lauer RM, Clake WR et al. Child hood risk factors for high adults blood pressure : The muscatine study. ***Pediatrics*** 1989;84:633-41.

26. Berenson GS, Srinivasan SR, Bao W, Newman WP 3rd, Tracy RE, Wattigney WA et al. Association between multiple cardiovascular risk factors and atherosclerosis in children and young adults. ***N Engl J med*** 1998; 338 : 1650 – 6.

27. Stabouli S, Kotsis V. Papamichael C, COnstapoulos A, Zakopoulos N et al. Adolescent obesity is associated with high ambulatory blood pressure and increased carotid intimal medial thickening. ***J.Pediatrics*** 2005; 147: 651-6.

28. Muntner P, He J, Cutler JA, Wildman RP, Whelton PK et al. Trends in blood pressure among children and adolescents. ***JAMA*** 2004; 291: 2107– 13.

29. Voors AW, Foster TA, Frerichs RR, Webber LS, Berensons GS et al. Studies of blood pressure in children, ages 5-14 years, in a circulation. 1996; 54 : 319-27.

30. Berenson GS, Voors AW, Webber LS, Dal feres ER, Harsha DW et al. Racial differences of parameter S associated with BP levels in children – the Bogalusa heart study. ***Metabolism*** 1979; 28: 1218 – 28.

31. Berenson GS, Wattingney WA, Webber LS et al. Demiology of hypertension from childhood to young adult hood in black, white and Hispanic population samples. ***Public Health Rep***. 196; 111 (Sup.2) : 3-6.

32. Jung FF, Ingel finger JR et al. Hypertension in childhood and adolescents. ***Pediatric Rev.*** 1993; 14: 169-79.

33. Robinson RF, Batisky DL, Hayer JR, Nahata Mc, Mahan JD significance of heritability in primary and secondary pediatric hypertension ***Am.J.Hypertension*** 2005; 18:917-21.

34. Flynn JT, Aiderman MH et al. Characteristic of children with primary hypertension seen as a referral centre ***pediatric nephrology*** 2005 ; 20: 961-6.

35. The Fourth Report on the diagnosis, evaluation, and treatment of high blood pressure in children and adolescents. ***Pediatrics*** 114: 555-576, 2004.

36. Review of medical physiology William F, Ganong, 22nd edition Pg589.

37. 'O' Brien E, Petrie J, Littler WA, de suier M, Pad filed PD et al. Blood pressure measurement : recommendation of the British hypertension society 3rd ed. London : ***BMJ Publishing group***, 1997.

38. Shanmugasundaram et al. Normal blood pressure in pediatric age group (1999)

39. Ramesh K Goyal, Vitthaldas N Shah, Bashi D Shaboo, Sanjiv R Phatale, Navneet N Shah et al, Prevalence of overweight obesity in adolescent school children. ***JAPI,*** March 2010 ; Vol 58 : 151-158.

40. Zuhal Gundogdu et al, Relationship between BMI and Blood Pressure in Girls and Boys; ***Public Health Nutrition,*** (2008) ; 11 : 1085-1088.

41. Falkner B, Gidding SS, West D. & Rappapor EB et al (2006) relationship of BMI and blood pressure in primary care pediatrics patients. J.Pediatrics 148, 195-200.

42. Burke V, Beiling LJ, Dunbar D, Kevan M et al (2004) Association between BP and overweight defined by new standards for BMI in child hood ***Prev med*** 38, 558-564.

43. Genoves ; S. Giussani M, Piercizzi F et al (2005) Result of blood pressure screening in a population of school – aged children in the province of Milan: role of overweight. ***J Hyper tension*** 23; 493-97.

44. Update on the 1987 task report on high blood pressure in children and adolescents: a working group report from NHBEP working group Hypertension control in children and adolescent. ***Pediatric (1996)*** 98; 649-58.

45. Paradis G, Lambart M, O'Loughlin et al. Blood pressure and adiposing in children and adolescents. ***Circulation 2009***; 110:1832-38.